<110> Rockefeller University

<120> LYTIC ENZYMES AND SPORE SURFACE ANTIGEN FOR DETECTION AND TREATMENT OF BACILLUS ANTHRACIS BACTERIA AND SPORES

<130> 12157/17

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<141> 2005-03-23

<150> 60/555,916
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Leu Thr Ala Ala Gln Lys Lys Glu Phe Asp Thr Leu Ala Ala Glu Leu
50 55 60

Val Arg Leu Lys Ile Phe Ser Asn Leu Asp Val Asp Ser Leu Ala Arg
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Tyr Val Asp Ser Lys Asp Gln Tyr Ile Lys Met Val Arg Leu Leu Arg
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Lys Thr Lys Pro Ser Asp Asp Phe Lys Leu Tyr Ser Gln Met Gln Arg
100 105 110

Ser Lys Asn Leu Leu Phe Asn Glu Cys Arg Ser Ser Ala Ser Asp Leu
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35 40 45

Leu Thr Ala Ala Gln Lys Lys Glu Phe Asp Thr Leu Ala Ala Glu Leu
50 55 60

Val Arg Leu Lys Ile Phe Ser Asn Leu Asp Val Asp Ser Leu Ala Arg
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Tyr Val Asp Ser Lys Asp Gln Tyr Ile Lys Met Val Arg Leu Leu Arg
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Lys Thr Lys Pro Ser Asp Asp Phe Lys Leu Tyr Ser Gln Met Gln Arg
100 105 110

Ser Lys Asn Leu Leu Phe Asn Glu Cys Arg Ser Ser Ala Ser Asp Leu
115 120 125

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Phe Ile Arg Asp Tyr Glu Glu Cys Gln Ser Glu Asp Ser Pro Phe Tyr
35 40 45

Phe Asp Gly Glu Ile Ala Glu Asp Phe Tyr Trp Phe Ala Lys Glu Phe
50 55 60

Lys His Val Glu Gly Ile Leu Ala Gly Glu Ser Val Glu Leu Thr Asp
65 70 75 80

Phe Gln Leu Phe Leu Ala Ala Asn Ile Phe Gly Phe Lys Lys Lys Ile
85 90 95

Asn Gly Ala Arg Arg Phe Arg Lys Val Phe Ile Gln Leu Ala Arg Lys
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Asn Ala Lys Ser Gln Phe Leu Ala Ile Val Ala Ala Phe Cys Thr Phe
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Leu Gly Asp Glu Lys Gln Arg Ala Tyr Ile Ala Gly Trp Thr Arg Asp
130 135 140

Gln Ser Ser Glu Val Tyr Glu Ala Val Lys Thr Gly Ile Ser Ser Ser
145 150 155 160

Glu Leu Leu Glu Gly Lys Trp Lys Glu Ala Tyr Ser Thr Ile Glu Ile
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Phe Lys Asn Gly Ser Val Val Val Pro Leu Ser Lys Glu Ala Arg Lys
180 185 190

Thr Gly Asp Gly Lys Asn Pro Ser Leu Gly Ile Val Asp Glu Tyr His
195 200 205

Ala His Glu Thr Asp Glu Ile Tyr Asp Val Leu Ser Ser Gly Met Val
210 215 220

Ala Arg Lys Glu Pro Leu Met Phe Ile Ile Thr Thr Ala Gly Phe Asp
225 230 235 240

Leu Ser Arg Pro Cys Tyr Arg Glu Tyr Glu Tyr Val Ser Asp Ile Leu
245 250 255

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Asp Pro Ser Lys Asn Val Glu Asn Asp Asp Tyr Phe Val Met Ile Cys
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Ala Asn Pro Ile Val Ala Thr Tyr Glu Glu Gly Leu Glu Gly Ile Arg
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Ser Asp Leu Lys Val Ala Leu Asp Arg Pro Glu Lys Met Arg Ala Phe
305                 310                 315                 320

Leu Thr Lys Asn Met Asn Ile Trp Val Asp Lys Lys Asp Asn Gly Tyr
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Met Asp Met Ser Lys Trp Gln Lys Cys Glu Val Asp Thr Phe Asp Phe
            340                 345                 350

Ser Gly Ala Thr Leu Trp Ile Gly Gly Asp Leu Ser Met Thr Thr Asp
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Leu Thr Ser Val Gly Trp Val Gly Met Asp Asp Glu Gly Asp Phe Ile
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Val Gly Gln His Ser Phe Met Pro Glu Ala Arg Leu Lys Glu Lys Met
385                 390                 395                 400

Ala Ile Asp Lys Val Arg Tyr Asp Leu Trp Ala Glu Gln Gly Tyr Leu
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Thr Leu Thr Pro Gly Glu Met Val Asp Tyr Thr Ile Val Glu Ser Trp
            420                 425                 430

Ile Glu Asn Phe Ser Lys Asp Lys Glu Ile Gln Glu Phe Asp Tyr Asp
        435                 440                 445

Lys Trp Asn Ala Leu His Leu Ala Gln Asn Leu Glu Asn Lys Gly Phe
    450                 455                 460

Val Cys Val Glu Ile Pro Gln Arg Ile Ala Asn Leu Ser Ile Pro Thr
465                 470                 475                 480

Lys Asn Phe Arg Glu Lys Val Tyr Glu Lys Lys Val Lys His Asn Gly
                485                 490                 495

Asp Pro Val Leu Phe Trp Ala Leu Asn Asn Ala Val Val Lys Met Asp
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Asp Gln Glu Asn Ile Met Ile Ser Lys Lys Ile Ser Lys Asn Arg Ile
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Asp Pro Ala Ala Ala Val Leu Asn Ala Phe Ser Arg Ala Met Tyr Gly
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Gly Lys Leu Trp Asn
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Phe Ile Arg Asp Tyr Glu Glu Cys Gln Ser Glu Asp Ser Pro Phe Tyr
35 40 45

Phe Asp Gly Glu Ile Ala Glu Asp Phe Tyr Trp Phe Ala Lys Glu Phe
50 55 60

Lys His Val Glu Gly Ile Leu Ala Gly Glu Ser Val Glu Leu Thr Asp
65 70 75 80

Phe Gln Leu Phe Leu Ala Ala Asn Ile Phe Gly Phe Lys Lys Lys Ile
85 90 95

Asn Gly Ala Arg Arg Phe Arg Lys Val Phe Ile Gln Leu Ala Arg Lys
100 105 110

Asn Ala Lys Ser Gln Phe Leu Ala Ile Val Ala Ala Phe Cys Thr Phe
115 120 125

Leu Gly Asp Glu Lys Gln Arg Ala Tyr Ile Ala Gly Trp Thr Arg Asp
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Gln Ser Ser Glu Val Tyr Glu Ala Val Lys Thr Gly Ile Ser Ser Ser
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Glu Leu Leu Glu Gly Lys Trp Lys Glu Ala Tyr Ser Thr Ile Glu Ile
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Phe Lys Asn Gly Ser Val Val Val Pro Leu Ser Lys Glu Ala Arg Lys

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Thr Gly Asp Gly Lys Asn Pro Ser Leu Gly Ile Val Asp Glu Tyr His
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275 280 285

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Val Gly Gln His Ser Phe Met Pro Glu Ala Arg Leu Lys Glu Lys Met
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435 440 445

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    530                 535                 540

Ala Ser Val Arg Phe Asp Val Ser Glu Phe Ala Asn Lys Asp Phe Leu
545                 550                 555                 560

Gly Lys Leu Trp Asn
                565
```

<210> 7
<211> 432
<212> PRT
<213> Bacillus anthracis

<400> 7

```
Val Lys Ile Val Asp Ser Val Lys Lys Phe Phe Asn Phe Glu Lys Arg
1               5                  10                  15

Gln Thr Ser Gln Val Ile Glu Leu Asn Lys Asp Asp Glu Lys Leu Leu
            20                  25                  30

Glu Trp Leu Gly Ile Ser Pro Ser Thr Ile Ser Val Lys Gly Lys Asn
        35                  40                  45

Ala Leu Lys Val Ala Thr Val Phe Ala Cys Ile Lys Ile Leu Ser Glu
    50                  55                  60

Ser Val Ser Lys Leu Pro Leu Lys Ile Tyr Gln Glu Asp Glu Tyr Gly
65                  70                  75                  80

Ile Gln Arg Gly Thr Lys His Tyr Leu Asn Asn Leu Leu Arg Leu Arg
                85                  90                  95

Pro Asn Pro Tyr Met Ser Ser Met Asn Phe Phe Gly Ser Leu Glu Ala
            100                 105                 110
```

```
Gln Lys Asn Leu Tyr Gly Asn Ser Tyr Ala Asn Ile Glu Phe Asp Arg
        115                 120                 125

Lys Gly Lys Val Gln Ala Leu Trp Pro Ile Asp Ala Ser Lys Val Thr
    130                 135                 140

Val Tyr Ile Asp Asp Val Gly Leu Leu Asn Ser Lys Thr Lys Met Trp
145                 150                 155                 160

Tyr Val Val Asn Thr Gly Gly Gln Gln Arg Val Leu Lys Pro Glu Glu
                165                 170                 175

Ile Leu His Phe Lys Asn Gly Ile Thr Leu Asp Gly Leu Val Gly Val
            180                 185                 190

Pro Thr Met Glu Tyr Leu Lys Ser Thr Leu Glu Asn Ser Ala Ser Ala
        195                 200                 205

Asp Lys Phe Ile Asn Asn Phe Tyr Lys Gln Gly Leu Gln Val Lys Gly
    210                 215                 220

Leu Val Gln Tyr Val Gly Asp Leu Asn Glu Asp Ala Lys Lys Val Phe
225                 230                 235                 240

Arg Glu Asn Phe Glu Ser Met Ser Ser Gly Leu Gln Asn Ser His Arg
                245                 250                 255

Ile Ala Leu Met Pro Val Gly Tyr Gln Phe Gln Pro Ile Ser Leu Asn
            260                 265                 270

Met Ser Asp Ala Gln Phe Leu Glu Asn Thr Glu Leu Thr Ile Arg Gln
        275                 280                 285

Ile Ala Thr Ala Phe Gly Ile Lys Met His Gln Leu Asn Asp Leu Ser
    290                 295                 300

Lys Ala Thr Leu Asn Asn Ile Glu Gln Gln Gln Gln Gln Phe Tyr Thr
305                 310                 315                 320

Asp Thr Leu Gln Ala Thr Leu Thr Met Tyr Glu Gln Glu Met Thr Tyr
                325                 330                 335

Lys Leu Phe Leu Asp Ser Glu Leu Asp Lys Gly Phe Tyr Ser Lys Phe
            340                 345                 350

Asn Val Asp Ala Ile Leu Arg Ala Asp Ile Lys Thr Arg Tyr Glu Ala
        355                 360                 365

Tyr Arg Thr Gly Ile Gln Gly Gly Phe Leu Lys Pro Asn Glu Ala Arg
    370                 375                 380
```

```
Ser Lys Glu Asp Leu Pro Pro Glu Ala Gly Gly Asp Arg Leu Leu Val
385                 390                 395                 400

Asn Gly Asn Met Leu Pro Ile Asp Met Ala Gly Gln Ala Tyr Leu Lys
                405                 410                 415

Gly Gly Asp Thr Asn Gly Glu Val Ser Lys Glu Gly Asn Glu Gly Asn
            420                 425                 430
```

<210> 8
<211> 432
<212> PRT
<213> Bacillus anthracis

<400> 8

```
Val Lys Ile Val Asp Ser Val Lys Lys Phe Phe Asn Phe Glu Lys Arg
1               5                   10                  15

Gln Thr Ser Gln Val Ile Glu Leu Asn Lys Asp Asp Glu Lys Leu Leu
            20                  25                  30

Glu Trp Leu Gly Ile Ser Pro Ser Thr Ile Ser Val Lys Gly Lys Asn
        35                  40                  45

Ala Leu Lys Val Ala Thr Val Phe Ala Cys Ile Lys Ile Leu Ser Glu
    50                  55                  60

Ser Val Ser Lys Leu Pro Leu Lys Ile Tyr Gln Glu Asp Glu Tyr Gly
65                  70                  75                  80

Ile Gln Arg Gly Thr Lys His Tyr Leu Asn Asn Leu Leu Arg Leu Arg
                85                  90                  95

Pro Asn Pro Tyr Met Ser Ser Met Asn Phe Phe Gly Ser Leu Glu Ala
            100                 105                 110

Gln Lys Asn Leu Tyr Gly Asn Ser Tyr Ala Asn Ile Glu Phe Asp Arg
        115                 120                 125

Lys Gly Lys Val Gln Ala Leu Trp Pro Ile Asp Ala Ser Lys Val Thr
    130                 135                 140

Val Tyr Ile Asp Asp Val Gly Leu Leu Asn Ser Lys Thr Lys Met Trp
145                 150                 155                 160

Tyr Val Val Asn Thr Gly Gly Gln Gln Arg Val Leu Lys Pro Glu Glu
                165                 170                 175

Ile Leu His Phe Lys Asn Gly Ile Thr Leu Asp Gly Leu Val Gly Val
            180                 185                 190
```

```
Pro Thr Met Glu Tyr Leu Lys Ser Thr Leu Glu Asn Ser Ala Ser Ala
        195                 200                 205

Asp Lys Phe Ile Asn Asn Phe Tyr Lys Gln Gly Leu Gln Val Lys Gly
    210                 215                 220

Leu Val Gln Tyr Val Gly Asp Leu Asn Glu Asp Ala Lys Lys Val Phe
225                 230                 235                 240

Arg Glu Asn Phe Glu Ser Met Ser Ser Gly Leu Gln Asn Ser His Arg
                245                 250                 255

Ile Ala Leu Met Pro Val Gly Tyr Gln Phe Gln Pro Ile Ser Leu Asn
            260                 265                 270

Met Ser Asp Ala Gln Phe Leu Glu Asn Thr Glu Leu Thr Ile Arg Gln
        275                 280                 285

Ile Ala Thr Ala Phe Gly Ile Lys Met His Gln Leu Asn Asp Leu Ser
    290                 295                 300

Lys Ala Thr Leu Asn Asn Ile Glu Gln Gln Gln Gln Gln Phe Tyr Thr
305                 310                 315                 320

Asp Thr Leu Gln Ala Thr Leu Thr Met Tyr Glu Gln Glu Met Thr Tyr
                325                 330                 335

Lys Leu Phe Leu Asp Ser Glu Leu Asp Lys Gly Phe Tyr Ser Lys Phe
            340                 345                 350

Asn Val Asp Ala Ile Leu Arg Ala Asp Ile Lys Thr Arg Tyr Glu Ala
        355                 360                 365

Tyr Arg Thr Gly Ile Gln Gly Gly Phe Leu Lys Pro Asn Glu Ala Arg
    370                 375                 380

Ser Lys Glu Asp Leu Pro Pro Glu Ala Gly Gly Asp Arg Leu Leu Val
385                 390                 395                 400

Asn Gly Asn Met Leu Pro Ile Asp Met Ala Gly Gln Ala Tyr Leu Lys
                405                 410                 415

Gly Gly Asp Thr Asn Gly Glu Val Ser Lys Glu Gly Asn Glu Gly Asn
            420                 425                 430
```

<210> 9
<211> 206
<212> PRT
<213> Bacillus anthracis

<400> 9

```
Met Glu Lys Ser Ala Lys Lys Glu Met Lys Glu Ile Arg Ala Leu Pro
1               5                  10                  15

Met Thr Ile Glu Val Arg Glu Val Asn Glu Asp Glu Gly Lys Arg Thr
            20                  25                  30

Ile Ser Gly Ser Ile Lys Tyr Asn Asn Glu Ser Ala Glu Met Arg Asp
        35                  40                  45

Trp Trp Gly Asp Thr Phe Val Glu Glu Ile Ala Glu Gly Ala Phe Asp
    50                  55                  60

Glu Ser Leu Lys Val Arg Asp Val Val Gly Leu Trp Ser His Asp Thr
65                  70                  75                  80

Ser Gln Val Leu Gly Asn Thr Lys Ser Lys Thr Leu Arg Ile Glu Asn
                85                  90                  95

Asp Lys Lys Glu Leu Arg Phe Glu Leu Asp Ile Pro Asn Thr Thr Val
            100                 105                 110

Gly Asn Asp Ala Trp Glu Leu Ile Lys Arg Gly Asp Val Asp Gly Val
        115                 120                 125

Ser Phe Gly Met Lys Val Thr Lys Asp Lys Trp Ser Ser Glu Glu Arg
    130                 135                 140

Glu Asn Gly Lys Leu Tyr Lys Arg Ser Ile Leu Asn Ala Glu Leu Tyr
145                 150                 155                 160

Glu Ile Ser Pro Val Ala Phe Pro Ala Tyr Pro Thr Asn Glu Val Ser
                165                 170                 175

Val Arg Ser Leu Asp Asp Phe Lys Ala Gly Glu Lys Arg Val Ala Asp
            180                 185                 190

Glu Phe Arg Lys Arg Lys Leu Gln Ile Glu Leu Glu Leu Ile
        195                 200                 205
```

<210> 10
<211> 206
<212> PRT
<213> Bacillus anthracis

<400> 10

```
Met Glu Lys Ser Ala Lys Lys Glu Met Lys Glu Ile Arg Ala Leu Pro
1               5                  10                  15

Met Thr Ile Glu Val Arg Glu Val Asn Glu Asp Glu Gly Lys Arg Thr
            20                  25                  30
```

Ile Ser Gly Ser Ile Lys Tyr Asn Asn Glu Ser Ala Glu Met Arg Asp
35 40 45

Trp Trp Gly Asp Thr Phe Val Glu Glu Ile Ala Glu Gly Ala Phe Asp
50 55 60

Glu Ser Leu Lys Val Arg Asp Val Val Gly Leu Trp Ser His Asp Thr
65 70 75 80

Ser Gln Val Leu Gly Asn Thr Lys Ser Lys Thr Leu Arg Ile Glu Asn
85 90 95

Asp Lys Lys Glu Leu Arg Phe Glu Leu Asp Ile Pro Asn Thr Thr Val
100 105 110

Gly Asn Asp Ala Trp Glu Leu Ile Lys Arg Gly Asp Val Asp Gly Val
115 120 125

Ser Phe Gly Met Lys Val Thr Lys Asp Lys Trp Ser Ser Glu Glu Arg
130 135 140

Glu Asn Gly Lys Leu Tyr Lys Arg Ser Ile Leu Asn Ala Glu Leu Tyr
145 150 155 160

Glu Ile Ser Pro Val Ala Phe Pro Ala Tyr Pro Thr Asn Glu Val Ser
165 170 175

Val Arg Ser Leu Asp Asp Phe Lys Ala Gly Glu Lys Arg Val Ala Asp
180 185 190

Glu Phe Arg Lys Arg Lys Leu Gln Ile Glu Leu Glu Leu Ile
195 200 205

<210> 11
<211> 392
<212> PRT
<213> Bacillus anthracis

<400> 11

Met Ser Lys Glu Leu Arg Glu Leu Leu Ala Lys Leu Glu Gly Lys Lys
1 5 10 15

Glu Glu Val Arg Ser Leu Met Gly Glu Asp Lys Val Ala Glu Ala Glu
20 25 30

Gln Met Met Glu Glu Val Arg Ser Leu Gln Lys Lys Ile Asp Leu Gln
35 40 45

Arg Ser Leu Asp Glu Ala Glu Thr Glu Glu Arg Asn Asn Gly Arg Glu
50 55 60

Val Glu Thr Arg Asn Val Asp Gly Glu Met Glu Tyr Arg Asp Val Phe
65 70 75 80

Met Lys Ala Leu Arg Asn Lys Pro Leu Asn Ala Glu Glu Arg Glu Phe
85 90 95

Leu Glu Asp Asp Leu Glu Gln Arg Ala Met Ser Gly Leu Thr Gly Glu
100 105 110

Asp Gly Gly Leu Val Ile Pro Gln Asp Ile Gln Thr Gln Ile Asn Glu
115 120 125

Leu Ala Arg Ser Phe Asp Ala Leu Glu Gln Tyr Val Thr Val Glu Pro
130 135 140

Val Arg Thr Arg Ser Gly Ser Arg Val Leu Glu Lys Asn Ser Asp Met
145 150 155 160

Ile Pro Phe Ala Glu Ile Thr Glu Met Gly Glu Ile Pro Glu Thr Asp
165 170 175

Asn Pro Lys Phe Ser Asn Val Gln Tyr Ala Val Lys Asp Arg Ala Gly
180 185 190

Ile Leu Pro Leu Ser Arg Ser Leu Leu Gln Asp Ser Asp Gln Asn Ile
195 200 205

Leu Lys Tyr Val Thr Lys Trp Leu Gly Lys Lys Ser Lys Val Thr Arg
210 215 220

Asn Val Leu Ile Leu Gly Val Ile Glu Lys Leu Thr Lys Gln Ala Ile
225 230 235 240

Lys Ser Leu Asp Asp Ile Lys Asp Val Leu Asn Val Lys Leu Asp Pro
245 250 255

Ala Ile Ser Pro Asn Ala Ile Leu Leu Thr Asn Gln Asp Gly Phe Asn
260 265 270

Tyr Leu Asp Lys Leu Lys Asp Lys Asp Gly Lys Tyr Ile Leu Gln Ser
275 280 285

Asp Pro Thr Gln Lys Asn Lys Lys Leu Phe Ala Gly Thr Asn Pro Val
290 295 300

Val Val Val Ser Asn Arg Phe Leu Lys Ser Lys Gly Thr Thr Ala Lys
305 310 315 320

Lys Ala Pro Leu Ile Ile Gly Asp Leu Lys Glu Ala Ile Val Leu Phe
325 330 335

```
Lys Arg Glu Asp Met Glu Leu Ala Ser Thr Asp Val Gly Gly Lys Ala
            340                 345                 350

Phe Thr Arg Asn Thr Leu Asp Leu Arg Ala Ile Gln Arg Asp Asp Val
        355                 360                 365

Gln Met Trp Asp Asn Glu Ala Ala Val Tyr Gly Glu Ile Asp Leu Ser
    370                 375                 380

Ala Pro Val Glu Gln Pro Gln Gly
385                 390
```

<210> 12
<211> 392
<212> PRT
<213> Bacillus anthracis

<400> 12

```
Met Ser Lys Glu Leu Arg Glu Leu Leu Ala Lys Leu Glu Gly Lys Lys
1               5                   10                  15

Glu Glu Val Arg Ser Leu Met Gly Glu Asp Lys Val Ala Glu Ala Glu
            20                  25                  30

Gln Met Met Glu Glu Val Arg Ser Leu Gln Lys Lys Ile Asp Leu Gln
        35                  40                  45

Arg Ser Leu Asp Glu Ala Glu Thr Glu Glu Arg Asn Asn Gly Arg Glu
    50                  55                  60

Val Glu Thr Arg Asn Val Asp Gly Glu Met Glu Tyr Arg Asp Val Phe
65                  70                  75                  80

Met Lys Ala Leu Arg Asn Lys Pro Leu Asn Ala Glu Glu Arg Glu Phe
                85                  90                  95

Leu Glu Asp Asp Leu Glu Gln Arg Ala Met Ser Gly Leu Thr Gly Glu
            100                 105                 110

Asp Gly Gly Leu Val Ile Pro Gln Asp Ile Gln Thr Gln Ile Asn Glu
        115                 120                 125

Leu Ala Arg Ser Phe Asp Ala Leu Glu Gln Tyr Val Thr Val Glu Pro
    130                 135                 140

Val Arg Thr Arg Ser Gly Ser Arg Val Leu Glu Lys Asn Ser Asp Met
145                 150                 155                 160

Ile Pro Phe Ala Glu Ile Thr Glu Met Gly Glu Ile Pro Glu Thr Asp
                165                 170                 175
```

```
Asn Pro Lys Phe Ser Asn Val Gln Tyr Ala Val Lys Asp Arg Ala Gly
            180                 185                 190

Ile Leu Pro Leu Ser Arg Ser Leu Leu Gln Asp Ser Asp Gln Asn Ile
        195                 200                 205

Leu Lys Tyr Val Thr Lys Trp Leu Gly Lys Lys Ser Lys Val Thr Arg
    210                 215                 220

Asn Val Leu Ile Leu Gly Val Ile Glu Lys Leu Thr Lys Gln Ala Ile
225                 230                 235                 240

Lys Ser Leu Asp Asp Ile Lys Asp Val Leu Asn Val Lys Leu Asp Pro
                245                 250                 255

Ala Ile Ser Pro Asn Ala Ile Leu Leu Thr Asn Gln Asp Gly Phe Asn
            260                 265                 270

Tyr Leu Asp Lys Leu Lys Asp Lys Asp Gly Lys Tyr Ile Leu Gln Ser
        275                 280                 285

Asp Pro Thr Gln Lys Asn Lys Lys Leu Phe Ala Gly Thr Asn Pro Val
    290                 295                 300

Val Val Val Ser Asn Arg Phe Leu Lys Ser Lys Gly Thr Thr Ala Lys
305                 310                 315                 320

Lys Ala Pro Leu Ile Ile Gly Asp Leu Lys Glu Ala Ile Val Leu Phe
                325                 330                 335

Lys Arg Glu Asp Met Glu Leu Ala Ser Thr Asp Val Gly Gly Lys Ala
            340                 345                 350

Phe Thr Arg Asn Thr Leu Asp Leu Arg Ala Ile Gln Arg Asp Asp Val
        355                 360                 365

Gln Met Trp Asp Asn Glu Ala Ala Val Tyr Gly Glu Ile Asp Leu Ser
    370                 375                 380

Ala Pro Val Glu Gln Pro Gln Gly
385                 390


<210>  13
<211>  96
<212>  PRT
<213>  Bacillus anthracis

<400>  13

Met Leu Val Thr Leu Glu Glu Ala Lys Glu Trp Ile Arg Val Asp Gly
1               5                   10                  15
```

Asp Asp Asp Pro Thr Ile Thr Met Leu Ile Lys Ala Ala Glu Leu Tyr
20 25 30

Ile Tyr Lys Ala Thr Gly Lys Thr Phe Thr Gln Thr Asn Glu Asp Ala
35 40 45

Lys Leu Leu Cys Leu Phe Leu Val Ala Asp Trp Tyr Gly Asn Arg Leu
50 55 60

Leu Val Gly Glu Lys Ala Ser Glu Lys Ile Arg Thr Ile Val Gln Ser
65 70 75 80

Met Ile Leu Gln Leu Gln Tyr Ala Ser Glu Pro Gln Glu Glu Arg Lys
85 90 95

<210> 14
<211> 96
<212> PRT
<213> Bacillus anthracis

<400> 14

Met Leu Val Thr Leu Glu Glu Ala Lys Glu Trp Ile Arg Val Asp Gly
1 5 10 15

Asp Asp Asp Pro Thr Ile Thr Met Leu Ile Lys Ala Ala Glu Leu Tyr
20 25 30

Ile Tyr Lys Ala Thr Gly Lys Thr Phe Thr Gln Thr Asn Glu Asp Ala
35 40 45

Lys Leu Leu Cys Leu Phe Leu Val Ala Asp Trp Tyr Gly Asn Arg Leu
50 55 60

Leu Val Gly Glu Lys Ala Ser Glu Lys Ile Arg Thr Ile Val Gln Ser
65 70 75 80

Met Ile Leu Gln Leu Gln Tyr Ala Ser Glu Pro Gln Glu Glu Arg Lys
85 90 95

<210> 15
<211> 107
<212> PRT
<213> Bacillus anthracis

<400> 15

Met Asn Pro Ala Lys Leu Asp Lys Arg Leu Thr Phe Gln Val Lys Asp
1 5 10 15

Glu Asn Ala Lys Gly Pro Asp Gly Asp Pro Ile Asp Gly Tyr Lys Asp
20 25 30

Ala Phe Thr Val Trp Gly Ser Phe Val Tyr Leu Lys Gly Arg Lys Tyr
35 40 45

Phe Glu Ala Ala Ala Ala Asn Ser Glu Val Gln Gly Glu Thr Glu Ile
50 55 60

Arg Asn Arg Asp Asp Val Ser Ala Asp Met Lys Ile Lys Tyr Lys Asn
65 70 75 80

Val Ile Tyr Asp Ile Val Ser Val Ile Pro Thr Gln Asp His Thr Leu
85 90 95

Leu Ile Met Trp Lys Arg Gly Glu Met Asn Gly
100 105

<210> 16
<211> 107
<212> PRT
<213> Bacillus anthracis

<400> 16

Met Asn Pro Ala Lys Leu Asp Lys Arg Leu Thr Phe Gln Val Lys Asp
1 5 10 15

Glu Asn Ala Lys Gly Pro Asp Gly Asp Pro Ile Asp Gly Tyr Lys Asp
20 25 30

Ala Phe Thr Val Trp Gly Ser Phe Val Tyr Leu Lys Gly Arg Lys Tyr
35 40 45

Phe Glu Ala Ala Ala Ala Asn Ser Glu Val Gln Gly Glu Thr Glu Ile
50 55 60

Arg Asn Arg Asp Asp Val Ser Ala Asp Met Lys Ile Lys Tyr Lys Asn
65 70 75 80

Val Ile Tyr Asp Ile Val Ser Val Ile Pro Thr Gln Asp His Thr Leu
85 90 95

Leu Ile Met Trp Lys Arg Gly Glu Met Asn Gly
100 105

<210> 17
<211> 105
<212> PRT
<213> Bacillus anthracis

<400> 17

Met Lys Leu Thr Leu Met Ile Asn Lys Glu Lys Gln Thr Phe Asn Met
1 5 10 15

Pro Glu Phe Ile Pro Ala Arg Leu Ile Arg Gln Ala Pro Glu Leu Ala
20 25 30

Glu Ile Pro Asn Asn Pro Gly Pro Glu Asp Met Asp Lys Met Val Gln
35 40 45

Phe Val Val Lys Val Tyr Asp Gly Gln Phe Thr Leu Asp Gln Tyr Trp
50 55 60

Asp Gly Val Asp Ala Arg Lys Phe Leu Ser Thr Thr Ser Asp Val Ile
65 70 75 80

Asn Ala Ile Ile Asn Glu Thr Val Glu Ala Ala Gly Gly Ser Thr Glu
85 90 95

Ser Gly Glu Glu Glu Asn Pro Asn Ala
100 105

<210> 18
<211> 105
<212> PRT
<213> Bacillus anthracis

<400> 18

Met Lys Leu Thr Leu Met Ile Asn Lys Glu Lys Gln Thr Phe Asn Met
1 5 10 15

Pro Glu Phe Ile Pro Ala Arg Leu Ile Arg Gln Ala Pro Glu Leu Ala
20 25 30

Glu Ile Pro Asn Asn Pro Gly Pro Glu Asp Met Asp Lys Met Val Gln
35 40 45

Phe Val Val Lys Val Tyr Asp Gly Gln Phe Thr Leu Asp Gln Tyr Trp
50 55 60

Asp Gly Val Asp Ala Arg Lys Phe Leu Ser Thr Thr Ser Asp Val Ile
65 70 75 80

Asn Ala Ile Ile Asn Glu Thr Val Glu Ala Ala Gly Gly Ser Thr Glu
85 90 95

Ser Gly Glu Glu Glu Asn Pro Asn Ala
100 105

<210> 19
<211> 119
<212> PRT
<213> Bacillus anthracis

<400> 19

Val Ile Asn Leu Arg Pro Asp Ile Leu Gln Ala Leu Glu Asn Asp Gln

1 5 10 15

Glu Leu Val Ser Leu Leu Gly Gly Lys Arg Ile Tyr Tyr Arg Lys Ala
20 25 30

Lys Lys Ala Glu Glu Phe Pro Arg Ile Thr Tyr Phe Glu Leu Asp Asn
35 40 45

Arg Pro Asp Gly Phe Ala Asp Asn Gln Glu Ile Glu Ser Glu Ile Leu
50 55 60

Phe Gln Val Asp Val Trp Ala Lys Ser Ser Thr Thr Ala Ile His Gln
65 70 75 80

Lys Val Asn Glu Ile Met Lys Arg Ile Gly Phe Ser Arg Tyr Ala Val
85 90 95

Ala Asp Leu Tyr Glu Glu Asp Thr Gln Ile Phe His Tyr Ala Met Arg
100 105 110

Phe Ala Lys Gly Val Glu Leu
115

<210> 20
<211> 119
<212> PRT
<213> Bacillus anthracis

<400> 20

Val Ile Asn Leu Arg Pro Asp Ile Leu Gln Ala Leu Glu Asn Asp Gln
1 5 10 15

Glu Leu Val Ser Leu Leu Gly Gly Lys Arg Ile Tyr Tyr Arg Lys Ala
20 25 30

Lys Lys Ala Glu Glu Phe Pro Arg Ile Thr Tyr Phe Glu Leu Asp Asn
35 40 45

Arg Pro Asp Gly Phe Ala Asp Asn Gln Glu Ile Glu Ser Glu Ile Leu
50 55 60

Phe Gln Val Asp Val Trp Ala Lys Ser Ser Thr Thr Ala Ile His Gln
65 70 75 80

Lys Val Asn Glu Ile Met Lys Arg Ile Gly Phe Ser Arg Tyr Ala Val
85 90 95

Ala Asp Leu Tyr Glu Glu Asp Thr Gln Ile Phe His Tyr Ala Met Arg
100 105 110

Phe Ala Lys Gly Val Glu Leu

<210> 21
<211> 202
<212> PRT
<213> Bacillus anthracis

<400> 21

Met Ala Gly Glu Val Val Arg Ile Ser Ser Thr Val Gly Val Asp Asn
1 5 10 15

Leu Val Tyr Ala Lys Val Leu Gln Asp Asp Ser Ser Ala Ile Lys Tyr
20 25 30

Thr Asp Val Lys Lys Met Glu Gly Ala Val Lys Val Lys Leu Thr Lys
35 40 45

Lys Val Ala Ser Glu Val Met Trp Ser Asp Asn Arg Lys Ser Glu Ile
50 55 60

Ala Glu Ser Asp Gly Glu Thr Glu Val Glu Ile Glu Val Arg Gly Leu
65 70 75 80

Ser Leu Ser Thr Lys Ala Asp Ile Glu Gly Phe Pro Glu Val Lys Asp
85 90 95

Gly Val Leu Asp Glu Lys Arg Glu Gly Glu Lys Pro Tyr Leu Ala Ile
100 105 110

Gly Phe Arg Phe Leu Lys Ala Asn Asp Lys Tyr Arg Tyr Val Trp Leu
115 120 125

Leu Lys Gly Lys Leu Ser Gln Glu Glu Glu Glu Ala Glu Thr Lys Lys
130 135 140

Asp Lys Pro Asn Phe Gln Thr Thr Lys Leu Lys Gly Ser Phe Ile Glu
145 150 155 160

Arg Asp Phe Asp Asp Arg Thr Lys Phe Thr Ala Asp Glu Asp Glu Pro
165 170 175

Thr Phe Thr Lys Leu Val Gly Asp Asn Trp Phe Asn Lys Val Tyr Glu
180 185 190

Lys Pro Val Thr Gln Pro Pro Ala Gly Lys
195 200

<210> 22
<211> 202
<212> PRT
<213> Bacillus anthracis

<400> 22

Met Ala Gly Glu Val Val Arg Ile Ser Ser Thr Val Gly Val Asp Asn
1 5 10 15

Leu Val Tyr Ala Lys Val Leu Gln Asp Asp Ser Ser Ala Ile Lys Tyr
20 25 30

Thr Asp Val Lys Lys Met Glu Gly Ala Val Lys Val Lys Leu Thr Lys
35 40 45

Lys Val Ala Ser Glu Val Met Trp Ser Asp Asn Arg Lys Ser Glu Ile
50 55 60

Ala Glu Ser Asp Gly Glu Thr Glu Val Glu Ile Glu Val Arg Gly Leu
65 70 75 80

Ser Leu Ser Thr Lys Ala Asp Ile Glu Gly Phe Pro Glu Val Lys Asp
85 90 95

Gly Val Leu Asp Glu Lys Arg Glu Gly Glu Lys Pro Tyr Leu Ala Ile
100 105 110

Gly Phe Arg Phe Leu Lys Ala Asn Asp Lys Tyr Arg Tyr Val Trp Leu
115 120 125

Leu Lys Gly Lys Leu Ser Gln Glu Glu Glu Glu Ala Glu Thr Lys Lys
130 135 140

Asp Lys Pro Asn Phe Gln Thr Thr Lys Leu Lys Gly Ser Phe Ile Glu
145 150 155 160

Arg Asp Phe Asp Asp Arg Thr Lys Phe Thr Ala Asp Glu Asp Glu Pro
165 170 175

Thr Phe Thr Lys Leu Val Gly Asp Asn Trp Phe Asn Lys Val Tyr Glu
180 185 190

Lys Pro Val Thr Gln Pro Pro Ala Gly Lys
195 200

<210> 23
<211> 105
<212> PRT
<213> Bacillus anthracis

<400> 23

Met Lys Leu Thr Leu Met Ile Asn Lys Glu Lys Gln Thr Phe Asn Met
1 5 10 15

Pro Glu Phe Ile Pro Ala Arg Leu Ile Arg Gln Ala Pro Glu Leu Ala
20 25 30

Glu Ile Pro Asn Asn Pro Gly Pro Glu Asp Met Asp Lys Met Val Gln
35 40 45

Phe Val Val Lys Val Tyr Asp Gly Gln Phe Thr Leu Asp Gln Tyr Trp
50 55 60

Asp Gly Val Asp Ala Arg Lys Phe Leu Ser Thr Thr Ser Asp Val Ile
65 70 75 80

Asn Ala Ile Ile Asn Glu Thr Val Glu Ala Ala Gly Gly Ser Thr Glu
85 90 95

Ser Gly Glu Glu Glu Asn Pro Asn Ala
100 105

<210> 24
<211> 105
<212> PRT
<213> Bacillus anthracis

<400> 24

Met Lys Leu Thr Leu Met Ile Asn Lys Glu Lys Gln Thr Phe Asn Met
1 5 10 15

Pro Glu Phe Ile Pro Ala Arg Leu Ile Arg Gln Ala Pro Glu Leu Ala
20 25 30

Glu Ile Pro Asn Asn Pro Gly Pro Glu Asp Met Asp Lys Met Val Gln
35 40 45

Phe Val Val Lys Val Tyr Asp Gly Gln Phe Thr Leu Asp Gln Tyr Trp
50 55 60

Asp Gly Val Asp Ala Arg Lys Phe Leu Ser Thr Thr Ser Asp Val Ile
65 70 75 80

Asn Ala Ile Ile Asn Glu Thr Val Glu Ala Ala Gly Gly Ser Thr Glu
85 90 95

Ser Gly Glu Glu Glu Asn Pro Asn Ala
100 105

<210> 25
<211> 58
<212> PRT
<213> Bacillus anthracis

<400> 25

Met Asp Glu Leu Tyr Leu Ser Leu Leu Arg Gln Gly Tyr Lys His His
1 5 10 15

```
His Ile Asp Asn Glu Met Asp Ile Trp His Tyr Leu Arg Leu Asn Arg
            20                  25                  30

Lys Met His Glu Asn Gly Asn Glu Asn Tyr Glu Gly Ser Asn Ser Asn
        35                  40                  45

Glu Ile Glu Val Pro Ala Glu Asn Ile Ile
    50                  55
```

<210> 26
<211> 58
<212> PRT
<213> Bacillus anthracis

<400> 26

```
Met Asp Glu Leu Tyr Leu Ser Leu Leu Arg Gln Gly Tyr Lys His His
1               5                   10                  15

His Ile Asp Asn Glu Met Asp Ile Trp His Tyr Leu Arg Leu Asn Arg
            20                  25                  30

Lys Met His Glu Asn Gly Asn Glu Asn Tyr Glu Gly Ser Asn Ser Asn
        35                  40                  45

Glu Ile Glu Val Pro Ala Glu Asn Ile Ile
    50                  55
```

<210> 27
<211> 1283
<212> PRT
<213> Bacillus anthracis

<400> 27

```
Met Ala Asn Glu Ile Asn Asn Leu Val Val Arg Leu Ser Leu Asp Asn
1               5                   10                  15

Val Asn Phe Arg Gln Gly Ile Ser Asn Ser Gly Arg Ala Val Arg Thr
            20                  25                  30

Leu Gln Asn Glu Leu Lys Ser Val Ser Thr Gly Met Gly Gly Phe Ala
        35                  40                  45

Asn Ala Ser Gln Gln Thr Gln Ala Lys Met Asn Thr Leu Ser Arg Leu
    50                  55                  60

Ile Asp Ala Gln Lys Glu Lys Val Lys Ala Leu Arg Gln Ala Tyr Asp
65                  70                  75                  80

Gln Asn Lys Ala Lys Leu Gly Glu Asn Asp Ala Ala Thr Gln Arg Tyr
                85                  90                  95
```

```
Ala Ser Gln Val Asn Lys Ala Val Ala Asp Leu Asn Arg Phe Glu Asn
            100                 105                 110

Glu Leu Lys Gln Val Asn Arg Gln Ala Glu Gln Lys Gly Met Asp Lys
        115                 120                 125

Leu Asn Asn Ser Leu Lys Ser Leu Gln Ala Glu Phe Gln Ser Ile Thr
    130                 135                 140

Thr Gly Met Gly Gly Phe Ser Asn Ala Thr Glu Gln Thr Arg Ala Lys
145                 150                 155                 160

Val Asp Val Leu Ser Arg Met Val Asp Lys Gln Lys Glu Lys Ile Arg
                165                 170                 175

Glu Leu Gln Gln Ala Tyr Asn Arg Ala Lys Thr Glu Glu Gly Glu Ala
            180                 185                 190

Ser Gln Ser Ala Gln Arg Tyr Ala Glu Gln Ile His Arg Ala Thr Ala
        195                 200                 205

Glu Leu Asn Arg Phe Glu Thr Gly Leu Gln Gln Ser Asn Arg Glu Leu
    210                 215                 220

Glu Gln Gln Gly Asn Arg Leu Leu Asn Phe Gly Asn Arg Met Glu Thr
225                 230                 235                 240

Leu Gly Asn His Leu Gln Asn Ala Gly Met Gln Ile Gly Met Val Phe
                245                 250                 255

Gly Gly Met Thr Tyr Ala Ile Gly Arg Gly Leu Lys Ser Ala Ile Thr
            260                 265                 270

Glu Ser Met Asn Phe Glu Gln Gln Met Ala Asn Val Lys Ala Val Ser
        275                 280                 285

Gly Ser Thr Gly Ala Glu Met Lys Lys Leu Ser Glu Leu Ala Val Asn
    290                 295                 300

Met Gly Glu Thr Thr Lys Tyr Ser Ser Val Gln Ala Gly Gln Gly Ile
305                 310                 315                 320

Glu Glu Leu Ile Lys Ala Gly Val Ser Leu Gln Asp Ile Ile Asn Gly
                325                 330                 335

Gly Leu Ala Gly Ala Leu Asn Leu Ala Thr Ala Gly Glu Leu Glu Leu
            340                 345                 350

Gly Glu Ala Ala Glu Ile Ala Ser Thr Ala Leu Asn Ala Phe Lys Ala
        355                 360                 365
```

```
Asp His Leu Ser Val Ala Asp Ala Ala Asn Ile Leu Ser Gly Ala Ala
    370                 375                 380

Asn Ala Ser Ala Thr Asp Val Arg Glu Leu Lys Tyr Gly Leu Ser Ala
385                 390                 395                 400

Ser Ser Ala Val Ala Ala Gly Ala Gly Met Thr Phe Lys Asp Thr Ala
                405                 410                 415

Thr Thr Leu Ala Val Phe Ala Gln Asn Gly Leu Lys Gly Ser Asp Ala
            420                 425                 430

Gly Thr Ser Leu Lys Thr Met Leu Met Arg Leu Asn Pro Ser Thr Lys
        435                 440                 445

Glu Ala Tyr Asn Lys Met Arg Asp Leu Gly Leu Ile Thr Tyr Asn Ala
    450                 455                 460

Gln Ala Gly Phe Asp Phe Leu Val Lys Asn Gly Ile Gln Pro Ala Ser
465                 470                 475                 480

Arg Asn Val Gly Asp Ile Glu Val Ala Leu Glu Gln Tyr Val Met Lys
                485                 490                 495

Thr Glu Gly Val Thr Lys Trp Asn Asp Lys Cys Asp Thr Thr Phe Arg
            500                 505                 510

Glu Leu Ala Thr Ser Ser Ala Phe Leu Ser Ser Lys Phe Tyr Asp Gln
        515                 520                 525

Gln Gly His Ile Gln Ser Leu Glu Asn Ile Ser Gly Thr Leu His Glu
    530                 535                 540

Ser Met Lys Asp Leu Thr Asp Gln Gln Arg Ser Met Ala Leu Glu Thr
545                 550                 555                 560

Leu Phe Gly Ser Asp Ala Val Arg Gly Ala Thr Ile Leu Phe Lys Glu
                565                 570                 575

Gly Ala Lys Gly Val Asn Glu Met Trp Asp Ser Met Ser Lys Val Thr
            580                 585                 590

Ala Ala Asp Val Ala Ala Thr Lys Ile Asp Thr Leu Lys Gly Arg Leu
        595                 600                 605

Thr Leu Leu Asp Ser Ala Phe Ser Thr Met Lys Lys Thr Ile Gly Asp
    610                 615                 620

Ala Leu Ala Pro Val Val Ser Val Phe Val Ala Gly Leu Gln Lys Leu
625                 630                 635                 640
```

```
Val Asp Gly Phe Asn Ser Leu Pro Gly Pro Val Gln Lys Ala Ile Ala
                645                 650                 655

Ile Thr Gly Gly Ile Val Leu Ala Leu Thr Ala Val Ala Thr Ala Ile
            660                 665                 670

Gly Val Val Leu Ala Ala Phe Gly Met Ile Ala Ser Gly Ile Gly Ser
        675                 680                 685

Leu Ser Leu Ala Leu Ala Ser Val Gly Gly Ile Ala Gly Ile Ala Ala
    690                 695                 700

Gly Ala Val Gly Phe Leu Gly Ser Ala Leu Ala Val Leu Thr Gly Pro
705                 710                 715                 720

Ile Gly Leu Val Ala Ala Ala Leu Ile Gly Thr Gly Val Val Ala Tyr
                725                 730                 735

Lys Ala Tyr Gln Lys Ala Thr Glu Asp Ser Ile Ala Ser Val Asp Arg
            740                 745                 750

Phe Ala Thr Asn Thr Glu Gly Lys Val Ser Ser Ser Thr Lys Lys Val
        755                 760                 765

Leu Gly Glu Tyr Phe Lys Leu Ser Asp Gly Ile Arg Gln Lys Leu Thr
    770                 775                 780

Glu Ile Arg Leu Asn His Glu Val Ile Thr Glu Glu Gln Ser Gln Lys
785                 790                 795                 800

Leu Ile Gly Gln Tyr Asp Lys Leu Ala Asn Thr Ile Ile Glu Lys Thr
                805                 810                 815

Asn Ala Arg Gln Gln Lys Glu Ile Glu Gly Leu Lys Lys Phe Phe Ala
            820                 825                 830

Asp Ser Tyr Val Leu Thr Ala Glu Glu Glu Asn Lys Arg Ile Glu Gln
        835                 840                 845

Leu Asn Gln His Tyr Glu Gln Glu Lys Leu Lys Thr Gln Glu Lys Glu
    850                 855                 860

Asn Lys Ile Lys Glu Ile Leu Gln Thr Ala Ala Arg Glu Asn Arg Glu
865                 870                 875                 880

Leu Thr Thr Ser Glu Arg Ile Ser Leu Gln Ala Leu Gln Asp Glu Met
                885                 890                 895

Asp Arg Val Ala Val Glu His Met Ser Lys Asn Gln Met Glu Gln Lys
```

900 905 910

Val Ile Leu Glu Asn Met Arg Val Gln Ala Ser Glu Ile Ser Ala Arg
915 920 925

Gln Ala Ala Glu Val Val Glu Asn Ser Ala Lys Ala Arg Asp Lys Val
930 935 940

Ile Glu Asp Ala Lys Lys Thr Arg Asp Glu Lys Ile Ala Glu Ala Ile
945 950 955 960

Arg Gln Arg Asp Glu Asn Lys Thr Ile Thr Ala Asp Glu Ala Asn Ala
965 970 975

Ile Ile Ala Glu Ala Lys Arg Gln Tyr Asp Ser Thr Val Ser Thr Ala
980 985 990

Arg Asp Lys His Lys Glu Ile Val Ser Glu Ala Lys Ala Gln Ala Gly
995 1000 1005

Glu His Ala Asn Gln Val Asp Trp Glu Thr Gly Gln Val Lys Ser
1010 1015 1020

Lys Tyr Gln Ala Met Lys Asp Asp Val Ile Arg Lys Met Lys Glu
1025 1030 1035

Met Trp Ser Asp Val Thr Asn Lys Tyr Glu Asp Met Lys Asn Ser
1040 1045 1050

Ala Ser Asn Lys Val Glu Glu Ile Lys Asn Thr Val Ser Arg Lys
1055 1060 1065

Phe Glu Glu Gln Lys Lys Ala Val Thr Asp Lys Met Ser Glu Ile
1070 1075 1080

Lys Ser Ser Ile Glu Asp Lys Trp Asn Thr Val Glu Lys Phe Phe
1085 1090 1095

Ser Ser Ile Asn Leu Arg Ser Ile Gly Lys Ser Ile Ile Glu Gly
1100 1105 1110

Leu Gly Lys Gly Ile Asp Asp Ala Ser Gly Gly Leu Phe Ser Lys
1115 1120 1125

Ala Ala Glu Ile Ala Ser Asp Ile Lys Lys Thr Ile Ser Gly Ala
1130 1135 1140

Leu Glu Ile Asn Ser Pro Ser Lys Val Met Ile Pro Val Gly Ser
1145 1150 1155

```
Ala Val  Pro Glu Gly Val Gly  Val Gly Met Asp Lys  Gly Lys Arg
    1160                 1165                 1170

Phe Val  Val Asp Ala Ala Lys  Asn Val Val Gly Thr  Val Lys Lys
    1175                 1180                 1185

Gln Met  Gly Asn Met Pro Ser  Val Phe Asp Phe Gly  Phe Gln Thr
    1190                 1195                 1200

Asn Gln  Tyr Ser Ile Pro Gln  Asn Thr Phe Ser Asp  Phe Ser Gly
    1205                 1210                 1215

Tyr Met  Gln Pro Gln Leu Ser  Tyr Asn Asn Pro Ser  Met Ala Lys
    1220                 1225                 1230

Thr Ile  Phe Pro Asn Arg Pro  Gly Gly Glu Gln Glu  Leu Asn Leu
    1235                 1240                 1245

Thr Val  Asn Met Thr Asn Val  Leu Asp Gly Lys Glu  Leu Ala Asn
    1250                 1255                 1260

Gly Ser  Tyr Thr Tyr Thr Thr  Lys Leu Gln Asn Arg  Glu Gln Lys
    1265                 1270                 1275

Arg Arg  Ala Glu Phe
    1280
```

<210> 28
<211> 1283
<212> PRT
<213> Bacillus anthracis

<400> 28

```
Met Ala Asn Glu Ile Asn Asn Leu Val Val Arg Leu Ser Leu Asp Asn
1               5                  10                  15

Val Asn Phe Arg Gln Gly Ile Ser Asn Ser Gly Arg Ala Val Arg Thr
            20                  25                  30

Leu Gln Asn Glu Leu Lys Ser Val Ser Thr Gly Met Gly Gly Phe Ala
        35                  40                  45

Asn Ala Ser Gln Gln Thr Gln Ala Lys Met Asn Thr Leu Ser Arg Leu
    50                  55                  60

Ile Asp Ala Gln Lys Glu Lys Val Lys Ala Leu Arg Gln Ala Tyr Asp
65                  70                  75                  80

Gln Asn Lys Ala Lys Leu Gly Glu Asn Asp Ala Ala Thr Gln Arg Tyr
                85                  90                  95
```

```
Ala Ser Gln Val Asn Lys Ala Val Ala Asp Leu Asn Arg Phe Glu Asn
            100                 105                 110

Glu Leu Lys Gln Val Asn Arg Gln Ala Glu Gln Lys Gly Met Asp Lys
        115                 120                 125

Leu Asn Asn Ser Leu Lys Ser Leu Gln Ala Glu Phe Gln Ser Ile Thr
    130                 135                 140

Thr Gly Met Gly Gly Phe Ser Asn Ala Thr Glu Gln Thr Arg Ala Lys
145                 150                 155                 160

Val Asp Val Leu Ser Arg Met Val Asp Lys Gln Lys Glu Lys Ile Arg
                165                 170                 175

Glu Leu Gln Gln Ala Tyr Asn Arg Ala Lys Thr Glu Glu Gly Glu Ala
            180                 185                 190

Ser Gln Ser Ala Gln Arg Tyr Ala Glu Gln Ile His Arg Ala Thr Ala
        195                 200                 205

Glu Leu Asn Arg Phe Glu Thr Gly Leu Gln Gln Ser Asn Arg Glu Leu
    210                 215                 220

Glu Gln Gln Gly Asn Arg Leu Leu Asn Phe Gly Asn Arg Met Glu Thr
225                 230                 235                 240

Leu Gly Asn His Leu Gln Asn Ala Gly Met Gln Ile Gly Met Val Phe
                245                 250                 255

Gly Gly Met Thr Tyr Ala Ile Gly Arg Gly Leu Lys Ser Ala Ile Thr
            260                 265                 270

Glu Ser Met Asn Phe Glu Gln Gln Met Ala Asn Val Lys Ala Val Ser
        275                 280                 285

Gly Ser Thr Gly Ala Glu Met Lys Lys Leu Ser Glu Leu Ala Val Asn
    290                 295                 300

Met Gly Glu Thr Thr Lys Tyr Ser Ser Val Gln Ala Gly Gln Gly Ile
305                 310                 315                 320

Glu Glu Leu Ile Lys Ala Gly Val Ser Leu Gln Asp Ile Ile Asn Gly
                325                 330                 335

Gly Leu Ala Gly Ala Leu Asn Leu Ala Thr Ala Gly Glu Leu Glu Leu
            340                 345                 350

Gly Glu Ala Ala Glu Ile Ala Ser Thr Ala Leu Asn Ala Phe Lys Ala
        355                 360                 365
```

```
Asp His Leu Ser Val Ala Asp Ala Ala Asn Ile Leu Ser Gly Ala Ala
    370                 375                 380

Asn Ala Ser Ala Thr Asp Val Arg Glu Leu Lys Tyr Gly Leu Ser Ala
385                 390                 395                 400

Ser Ser Ala Val Ala Ala Gly Ala Gly Met Thr Phe Lys Asp Thr Ala
                405                 410                 415

Thr Thr Leu Ala Val Phe Ala Gln Asn Gly Leu Lys Gly Ser Asp Ala
            420                 425                 430

Gly Thr Ser Leu Lys Thr Met Leu Met Arg Leu Asn Pro Ser Thr Lys
        435                 440                 445

Glu Ala Tyr Asn Lys Met Arg Asp Leu Gly Leu Ile Thr Tyr Asn Ala
    450                 455                 460

Gln Ala Gly Phe Asp Phe Leu Val Lys Asn Gly Ile Gln Pro Ala Ser
465                 470                 475                 480

Arg Asn Val Gly Asp Ile Glu Val Ala Leu Glu Gln Tyr Val Met Lys
                485                 490                 495

Thr Glu Gly Val Thr Lys Trp Asn Asp Lys Cys Asp Thr Thr Phe Arg
            500                 505                 510

Glu Leu Ala Thr Ser Ser Ala Phe Leu Ser Ser Lys Phe Tyr Asp Gln
        515                 520                 525

Gln Gly His Ile Gln Ser Leu Glu Asn Ile Ser Gly Thr Leu His Glu
    530                 535                 540

Ser Met Lys Asp Leu Thr Asp Gln Gln Arg Ser Met Ala Leu Glu Thr
545                 550                 555                 560

Leu Phe Gly Ser Asp Ala Val Arg Gly Ala Thr Ile Leu Phe Lys Glu
                565                 570                 575

Gly Ala Lys Gly Val Asn Glu Met Trp Asp Ser Met Ser Lys Val Thr
            580                 585                 590

Ala Ala Asp Val Ala Ala Thr Lys Ile Asp Thr Leu Lys Gly Arg Leu
        595                 600                 605

Thr Leu Leu Asp Ser Ala Phe Ser Thr Met Lys Lys Thr Ile Gly Asp
    610                 615                 620

Ala Leu Ala Pro Val Val Ser Val Phe Val Ala Gly Leu Gln Lys Leu
625                 630                 635                 640
```

```
Val Asp Gly Phe Asn Ser Leu Pro Gly Pro Val Gln Lys Ala Ile Ala
                645                 650                 655

Ile Thr Gly Gly Ile Val Leu Ala Leu Thr Ala Val Ala Thr Ala Ile
            660                 665                 670

Gly Val Val Leu Ala Ala Phe Gly Met Ile Ala Ser Gly Ile Gly Ser
        675                 680                 685

Leu Ser Leu Ala Leu Ala Ser Val Gly Gly Ile Ala Gly Ile Ala Ala
    690                 695                 700

Gly Ala Val Gly Phe Leu Gly Ser Ala Leu Ala Val Leu Thr Gly Pro
705                 710                 715                 720

Ile Gly Leu Val Ala Ala Ala Leu Ile Gly Thr Gly Val Val Ala Tyr
                725                 730                 735

Lys Ala Tyr Gln Lys Ala Thr Glu Asp Ser Ile Ala Ser Val Asp Arg
            740                 745                 750

Phe Ala Thr Asn Thr Glu Gly Lys Val Ser Ser Ser Thr Lys Lys Val
        755                 760                 765

Leu Gly Glu Tyr Phe Lys Leu Ser Asp Gly Ile Arg Gln Lys Leu Thr
    770                 775                 780

Glu Ile Arg Leu Asn His Glu Val Ile Thr Glu Glu Gln Ser Gln Lys
785                 790                 795                 800

Leu Ile Gly Gln Tyr Asp Lys Leu Ala Asn Thr Ile Ile Glu Lys Thr
                805                 810                 815

Asn Ala Arg Gln Gln Lys Glu Ile Glu Gly Leu Lys Lys Phe Phe Ala
            820                 825                 830

Asp Ser Tyr Val Leu Thr Ala Glu Glu Glu Asn Lys Arg Ile Glu Gln
        835                 840                 845

Leu Asn Gln His Tyr Glu Gln Glu Lys Leu Lys Thr Gln Glu Lys Glu
    850                 855                 860

Asn Lys Ile Lys Glu Ile Leu Gln Thr Ala Ala Arg Glu Asn Arg Glu
865                 870                 875                 880

Leu Thr Thr Ser Glu Arg Ile Ser Leu Gln Ala Leu Gln Asp Glu Met
                885                 890                 895

Asp Arg Val Ala Val Glu His Met Ser Lys Asn Gln Met Glu Gln Lys
```

900 905 910

Val Ile Leu Glu Asn Met Arg Val Gln Ala Ser Glu Ile Ser Ala Arg
915 920 925

Gln Ala Ala Glu Val Val Glu Asn Ser Ala Lys Ala Arg Asp Lys Val
930 935 940

Ile Glu Asp Ala Lys Lys Thr Arg Asp Glu Lys Ile Ala Glu Ala Ile
945 950 955 960

Arg Gln Arg Asp Glu Asn Lys Thr Ile Thr Ala Asp Glu Ala Asn Ala
965 970 975

Ile Ile Ala Glu Ala Lys Arg Gln Tyr Asp Ser Thr Val Ser Thr Ala
980 985 990

Arg Asp Lys His Lys Glu Ile Val Ser Glu Ala Lys Ala Gln Ala Gly
995 1000 1005

Glu His Ala Asn Gln Val Asp Trp Glu Thr Gly Gln Val Lys Ser
1010 1015 1020

Lys Tyr Gln Ala Met Lys Asp Asp Val Ile Arg Lys Met Lys Glu
1025 1030 1035

Met Trp Ser Asp Val Thr Asn Lys Tyr Glu Asp Met Lys Asn Ser
1040 1045 1050

Ala Ser Asn Lys Val Glu Glu Ile Lys Asn Thr Val Ser Arg Lys
1055 1060 1065

Phe Glu Glu Gln Lys Lys Ala Val Thr Asp Lys Met Ser Glu Ile
1070 1075 1080

Lys Ser Ser Ile Glu Asp Lys Trp Asn Thr Val Glu Lys Phe Phe
1085 1090 1095

Ser Ser Ile Asn Leu Arg Ser Ile Gly Lys Ser Ile Ile Glu Gly
1100 1105 1110

Leu Gly Lys Gly Ile Asp Asp Ala Ser Gly Gly Leu Phe Ser Lys
1115 1120 1125

Ala Ala Glu Ile Ala Ser Asp Ile Lys Lys Thr Ile Ser Gly Ala
1130 1135 1140

Leu Glu Ile Asn Ser Pro Ser Lys Val Met Ile Pro Val Gly Ser
1145 1150 1155

```
Ala Val  Pro Glu Gly Val Gly  Val Gly Met Asp Lys  Gly Lys Arg
    1160                1165                1170

Phe Val  Val Asp Ala Ala Lys  Asn Val Val Gly Thr  Val Lys Lys
    1175                1180                1185

Gln Met  Gly Asn Met Pro Ser  Val Phe Asp Phe Gly  Phe Gln Thr
    1190                1195                1200

Asn Gln  Tyr Ser Ile Pro Gln  Asn Thr Phe Ser Asp  Phe Ser Gly
    1205                1210                1215

Tyr Met  Gln Pro Gln Leu Ser  Tyr Asn Asn Pro Ser  Met Ala Lys
    1220                1225                1230

Thr Ile  Phe Pro Asn Arg Pro  Gly Gly Glu Gln Glu  Leu Asn Leu
    1235                1240                1245

Thr Val  Asn Met Thr Asn Val  Leu Asp Gly Lys Glu  Leu Ala Asn
    1250                1255                1260

Gly Ser  Tyr Thr Tyr Thr Thr  Lys Leu Gln Asn Arg  Glu Gln Lys
    1265                1270                1275

Arg Arg  Ala Glu Phe
    1280
```

<210> 29
<211> 496
<212> PRT
<213> Bacillus anthracis

<400> 29

```
Leu Gly Lys Leu Ser Phe Thr Phe Asn Asn Ile Arg Lys Asp Tyr Ile
1               5                  10                  15

Gln Met Leu Val Gly Arg Lys Arg Pro Ser Trp Ala Pro Val Lys Arg
            20                  25                  30

Arg Leu Val Arg Val Pro His Arg Ala Gly Ala Leu Leu Leu Asn Thr
        35                  40                  45

Glu Thr Glu Glu Arg Arg Ile Asp Val Pro Leu Val Ile Lys Ala Lys
    50                  55                  60

Lys Asp Met Ala Asp Leu Gln Lys Leu Lys Glu Asp Leu Ala Asp Trp
65                  70                  75                  80

Leu Tyr Thr Glu Gln Pro Ala Glu Leu Ile Phe Asp Asp Glu Leu Asp
                85                  90                  95
```

```
Arg Thr Tyr Leu Ala Leu Ile Asp Gly Ser Val Asp Leu Asp Glu Ile
            100                 105                 110

Val Asn Arg Gly Arg Gly Val Ile Thr Phe Val Cys Pro Met Pro Tyr
        115                 120                 125

Lys Leu Gly Lys Thr Asn Thr His Lys Phe Thr Gln Glu Trp Ser Thr
    130                 135                 140

Glu Thr Thr Ser Tyr Phe Thr Asn Lys Gly Ser Val Glu Ala Pro Ala
145                 150                 155                 160

Leu Ile Glu Met Thr Val Lys Lys Pro Ser Thr Phe Leu Asp Val Trp
                165                 170                 175

Phe Gly Glu Tyr Pro Asn Asn Arg Asp Tyr Phe Arg Ile Gly Tyr Pro
            180                 185                 190

Leu Thr Val Glu Glu Thr Thr Val Gln Glu Arg Glu Arg Val Met Trp
        195                 200                 205

Asp Glu Met Ala Thr Pro Ile Gly Trp Thr Pro Val Thr Gly Gln Phe
    210                 215                 220

Asp Asp Met Lys Gly Thr Gly Ser Phe Lys Ser Arg Gly Gly Tyr Ala
225                 230                 235                 240

Leu Tyr Cys Glu Asp Tyr Gly Lys Asp Val Gly Phe Tyr Gly Ala Ile
                245                 250                 255

Ala Lys Lys Asn Ile Pro Gly Gly Pro Leu Gln Asp Phe Glu Met Glu
            260                 265                 270

Ala Trp Met Thr Leu Lys Ser Lys Asn Ile Gly Glu Met Gly Arg Val
        275                 280                 285

Glu Val Leu Leu Leu Asp Glu Ala Ser Asn Val Val Ala Arg Ile Asn
    290                 295                 300

Met Asn Asp Leu Tyr Ala Thr Ala Glu Ile Thr Arg Ala His Met Lys
305                 310                 315                 320

Ile Gly Asn Ser Gly Thr Pro Asn Ser Phe Arg Lys Leu Val Asp Thr
                325                 330                 335

Ser Gly Tyr Tyr Ser Asn Thr Phe Asn Gln Phe Arg Gly Arg Leu Arg
            340                 345                 350

Ile Ala Arg Arg Gly Lys Val Trp Ser Val Tyr Val Ala Lys Phe Ile
        355                 360                 365
```

```
Asp Gly Thr Glu Lys Asp Gly Ala Ser Leu Val Glu Arg Trp Ile Asp
    370                 375                 380

Glu Thr Gly Asn Pro Met Thr Glu Arg Lys Ile Ala Gln Val Met Ile
385                 390                 395                 400

Ala Ile Cys Lys Trp Asp Asn His Gln Pro Val Asn Glu Ile Gln Ile
                405                 410                 415

Asp Asp Leu Lys Phe Trp Lys Val Asn Lys Val Pro Ser Asn Ala Gln
            420                 425                 430

Pro Tyr Ile Phe Asp Thr Gly Asp Lys Ile Val Ile Asp Thr Glu Lys
        435                 440                 445

Ser Leu Val Thr Ile Asn Gly Lys Asn Ala Ile Asn Ile Lys Glu Ile
    450                 455                 460

Phe Ser Asn Phe Pro Val Ile Ile Arg Gly Asp Asn Arg Ile Asp Ile
465                 470                 475                 480

Met Pro Pro Asp Val Asn Ala Thr Ile Ser Tyr Arg Glu Arg Tyr Arg
                485                 490                 495
```

<210> 30
<211> 496
<212> PRT
<213> Bacillus anthracis

<400> 30

```
Met Gly Lys Leu Ser Phe Thr Phe Asn Asn Ile Arg Lys Asp Tyr Ile
1               5                   10                  15

Gln Met Leu Val Gly Arg Lys Arg Pro Ser Trp Ala Pro Val Lys Arg
            20                  25                  30

Arg Leu Val Arg Val Pro His Arg Ala Gly Ala Leu Leu Leu Asn Thr
        35                  40                  45

Glu Thr Glu Glu Arg Arg Ile Asp Val Pro Leu Val Ile Lys Ala Lys
    50                  55                  60

Lys Asp Met Ala Asp Leu Gln Lys Leu Lys Glu Asp Leu Ala Asp Trp
65                  70                  75                  80

Leu Tyr Thr Glu Gln Pro Ala Glu Leu Ile Phe Asp Asp Glu Leu Asp
                85                  90                  95

Arg Thr Tyr Leu Ser Leu Ile Asp Gly Ser Val Asp Leu Asp Glu Ile
            100                 105                 110
```

```
Val Asn Arg Gly Lys Gly Val Ile Thr Phe Val Cys Pro Met Pro Tyr
        115                 120                 125

Lys Leu Gly Lys Ile Asn Thr His Lys Phe Thr Gln Glu Trp Ser Thr
    130                 135                 140

Glu Thr Thr Ser Tyr Phe Thr Asn Lys Gly Ser Val Glu Ala Pro Ala
145                 150                 155                 160

Leu Ile Glu Met Thr Val Lys Lys Pro Ser Thr Phe Leu Asp Val Trp
                165                 170                 175

Phe Gly Glu Tyr Pro His Asn Arg Asp Tyr Phe Arg Ile Gly Tyr Pro
            180                 185                 190

Leu Thr Val Glu Glu Thr Thr Val Gln Glu Arg Glu Arg Val Met Trp
        195                 200                 205

Asp Glu Met Ala Thr Pro Ile Gly Trp Thr Pro Val Thr Gly Gln Phe
    210                 215                 220

Glu Glu Met Lys Gly Thr Gly Ser Phe Lys Ser Arg Gly Gly His Ala
225                 230                 235                 240

Leu Tyr Cys Glu Asp Tyr Gly Lys Glu Thr Gly Phe Tyr Gly Ala Ile
                245                 250                 255

Ala Lys Lys Asn Ile Pro Gly Gly Pro Leu Gln Asp Phe Glu Met Glu
            260                 265                 270

Ala Trp Val Thr Leu Lys Ser Lys Asn Ile Ser Glu Met Gly Arg Val
        275                 280                 285

Glu Val Leu Leu Leu Asp Glu Thr Ser Asn Val Ile Ser Arg Ile Asn
    290                 295                 300

Met Asn Asp Leu Tyr Ala Thr Ala Glu Ile Thr Arg Ala His Met Thr
305                 310                 315                 320

Ile Gly Asn Ser Gly Thr Pro Asn Ser Phe Arg Lys Leu Val Asp Thr
                325                 330                 335

Ser Gly Phe Tyr Ser Thr Thr Phe Asn Gln Phe Arg Gly Arg Leu Arg
            340                 345                 350

Ile Ala Arg Arg Gly Lys Val Trp Ser Val Tyr Val Ala Lys Phe Ile
        355                 360                 365

Asp Gly Thr Glu Lys Asp Gly Ala Ser Leu Val Glu Arg Trp Ile Asp
    370                 375                 380
```

Glu Thr Gly Asn Pro Met Thr Glu Arg Lys Ile Ala Gln Val Met Ile
385 390 395 400

Ala Ile Cys Lys Trp Asp Asn His Gln Pro Ile Asn Glu Met Gln Ile
405 410 415

Asp Asp Leu Lys Ile Trp Lys Val Asn Lys Val Pro Ser Asn Ala Gln
420 425 430

Pro Tyr Ile Phe Asp Thr Gly Asp Lys Ile Val Ile Asp Thr Glu Lys
435 440 445

Ser Leu Val Thr Ile Asn Gly Glu Lys Ala Ile Asn Ile Lys Glu Ile
450 455 460

Phe Ser Asn Phe Pro Val Val Ile Arg Gly Glu Asn Arg Ile Asp Ile
465 470 475 480

Met Pro Pro Asp Val Asn Ala Thr Ile Ser Tyr Arg Glu Arg Tyr Arg
485 490 495

<210> 31
<211> 1331
<212> PRT
<213> Bacillus anthracis

<400> 31

Met Arg Thr Pro Ser Gly Ile Leu His Val Val Asp Phe Lys Thr Asp
1 5 10 15

Gln Ile Val Ala Ala Ile Gln Pro Glu Asp Tyr Trp Asp Asp Lys Arg
20 25 30

His Trp Glu Leu Lys Asn Asn Val Asp Met Leu Asp Phe Thr Ala Phe
35 40 45

Asp Gly Thr Asp His Ala Val Thr Leu Gln Gln Gln Asn Leu Val Leu
50 55 60

Lys Glu Val Arg Asp Gly Arg Ile Val Pro Tyr Val Ile Thr Glu Thr
65 70 75 80

Glu Lys Asn Ser Asp Thr Arg Ser Ile Thr Thr Tyr Ala Ser Gly Ala
85 90 95

Trp Ile Gln Ile Ala Lys Ser Gly Ile Ile Lys Pro Gln Arg Ile Glu
100 105 110

Ser Lys Thr Val Asn Glu Phe Met Asp Leu Ala Leu Leu Gly Met Lys
115 120 125

Trp Lys Arg Gly Ile Thr Glu Tyr Ala Gly Phe His Thr Met Thr Ile
130 135 140

Asp Glu Tyr Ile Asp Pro Leu Thr Phe Leu Lys Lys Ile Ala Ser Leu
145 150 155 160

Phe Lys Leu Glu Ile Arg Tyr Arg Val Glu Ile Lys Gly Ser Arg Ile
165 170 175

Ile Gly Trp Tyr Val Asp Met Ile Gln Lys Arg Gly His Asp Thr Gly
180 185 190

Lys Glu Ile Glu Leu Gly Lys Asp Leu Val Gly Val Thr Arg Ile Glu
195 200 205

His Thr Arg Asn Ile Cys Ser Ala Leu Val Gly Phe Val Lys Gly Glu
210 215 220

Gly Asp Lys Val Ile Thr Ile Glu Ser Ile Asn Lys Gly Leu Pro Tyr
225 230 235 240

Ile Val Asp Ala Asp Ala Phe Gln Arg Trp Asn Glu His Gly Gln His
245 250 255

Lys Phe Gly Phe Tyr Thr Pro Glu Thr Glu Glu Leu Asp Met Thr Pro
260 265 270

Lys Arg Leu Leu Thr Leu Met Glu Ile Glu Leu Lys Lys Arg Val Asn
275 280 285

Ser Ser Ile Ser Tyr Glu Val Glu Ala Gln Ser Ile Gly Arg Ile Phe
290 295 300

Gly Leu Glu His Glu Leu Ile Asn Glu Gly Asp Thr Ile Lys Ile Lys
305 310 315 320

Asp Thr Gly Phe Thr Pro Glu Leu Tyr Leu Glu Ala Arg Val Ile Ala
325 330 335

Gly Asp Glu Ser Phe Thr Asp Ser Thr Gln Asp Lys Tyr Glu Phe Gly
340 345 350

Asp Tyr Arg Glu Ile Val Asn Gln Asn Glu Glu Leu Arg Lys Ile Tyr
355 360 365

Asn Arg Ile Leu Ser Ser Leu Gly Asn Lys Gln Glu Met Ile Asp Gln
370 375 380

Leu Asp Arg Leu Val Gln Glu Ala Asn Glu Thr Ala Ser Asn Ala Lys

385 390 395 400

Lys Glu Ser Glu Ala Ala Lys Thr Leu Ala Glu Lys Val Gln Glu Asn
405 410 415

Ile Lys Asn Asn Thr Val Glu Ile Ile Glu Ser Lys Asn Pro Pro Thr
420 425 430

Thr Gly Leu Lys Pro Phe Lys Thr Leu Trp Arg Asp Ile Ser Ile Gly
435 440 445

Lys Pro Gly Ile Leu Lys Ile Trp Thr Gly Thr Ala Trp Glu Ser Val
450 455 460

Val Pro Asp Val Glu Ser Val Lys Lys Glu Thr Leu Asp Gln Val Asn
465 470 475 480

Lys Asp Ile Ala Thr Thr Lys Thr Glu Leu Asn Gln Lys Val Gln Glu
485 490 495

Ala Gln Asn Gln Ala Thr Gly Gln Phe Asn Glu Val Lys Glu Ser Leu
500 505 510

Gln Gly Val Ser Arg Thr Ile Ser Asn Val Glu Asn Lys Gln Gly Glu
515 520 525

Ile Asp Lys Lys Ile Thr Lys Phe Glu Gln Asp Ser Ser Gly Phe Lys
530 535 540

Thr Ser Ile Glu Ser Leu Thr Lys Lys Asp Thr Glu Ile Ser Asn Lys
545 550 555 560

Leu Asn Thr Val Glu Ser Thr Val Glu Gly Thr Lys Lys Thr Ile Ser
565 570 575

Glu Val Gln Gln Thr Thr Asn Asp Leu Lys Lys Lys Thr Thr Glu Ile
580 585 590

Glu Glu Lys Ala Gly Lys Ile Thr Glu Lys Leu Thr Ser Leu Glu Thr
595 600 605

Arg Glu Val Asn Val Arg Asn Tyr Val Ile Asn Ser Asp Phe Ser Asn
610 615 620

Val Thr Asn Ser Trp Ile Gly Ile Thr Asn Ala Thr Leu Phe Lys Phe
625 630 635 640

Val Asp Val Asn Ile Ser Glu Ala Ser Ala Ile Lys Lys Gly Leu Gln
645 650 655

```
Ile Thr Ser Asn Lys Ala Phe Val Tyr Gln Lys Leu Pro Ala Asp Val
            660                 665                 670

Phe Lys Lys Lys Lys Gly Ile Ala Ser Cys Tyr Ile Asn Val Ser Ser
        675                 680                 685

Phe Thr Pro Gly Thr Asp Tyr Pro Arg Leu Tyr Met Arg Phe Thr Tyr
    690                 695                 700

Asp Gln Asn Gly Thr Glu Lys Gln Tyr Tyr Ala Ile Leu Lys Gln Gln
705                 710                 715                 720

Glu Val Thr Asn Gly Trp Ile Arg Ile Ser Ile Pro Phe Asp Thr Thr
                725                 730                 735

Gly Tyr Thr Gly Glu Leu Lys Glu Val Arg Val Asn Ile Ala Thr Ala
            740                 745                 750

Asp Thr Thr Thr Ile Asp Ala Thr Phe Thr Gly Ile Met Val Thr Phe
        755                 760                 765

Gly Asp Leu Ile Glu Ser Trp Asn Leu Ala Pro Glu Asp Gly Val Thr
    770                 775                 780

Gln Gly Val Phe Gln Ser Lys Thr Thr Glu Ile Glu Lys Ser Val Asp
785                 790                 795                 800

Gly Val Lys Thr Thr Val Thr Asn Val Gln Asn Ser Gln Ala Gly Phe
                805                 810                 815

Glu Lys Arg Met Ser Asn Val Glu Gln Thr Ala Thr Gly Leu Ser Ser
            820                 825                 830

Thr Val Ser Asn Leu Asn Asn Val Val Ser Asp Gln Gly Lys Lys Leu
        835                 840                 845

Thr Glu Ala Asn Thr Lys Leu Glu Gln Gln Ala Thr Ala Ile Gly Ala
    850                 855                 860

Lys Val Glu Leu Lys Gln Val Glu Asp Tyr Val Ala Gly Phe Lys Ile
865                 870                 875                 880

Pro Glu Leu Lys Gln Thr Val Asp Lys Asn Lys Gln Asp Leu Leu Asp
                885                 890                 895

Glu Leu Ala Asn Lys Leu Ala Thr Glu Gln Phe Asn Gln Lys Met Thr
            900                 905                 910

Leu Ile Asp Asn Arg Phe Thr Ile Asn Glu Gln Gly Ile Asn Ala Ala
        915                 920                 925
```

```
Ala Lys Lys Thr Glu Val Tyr Thr Lys Thr Gln Ala Asp Gly Gln Phe
    930                 935                 940

Ala Thr Asp Ser Tyr Val Arg Asp Met Glu Ser Arg Leu Gln Leu Thr
945                 950                 955                 960

Glu Lys Gly Val Ser Ile Ser Val Lys Glu Asn Asp Val Ile Ala Ala
                965                 970                 975

Ile Asn Met Ser Lys Glu Asn Ile Lys Leu Asn Ala Ala Arg Ile Asp
            980                 985                 990

Leu Val Gly Lys Val Asn Ala Glu  Trp Ile Lys Ala Gly  Leu Leu Ser
        995                 1000                1005

Gly Cys  Gln Ile Arg Thr Ser  Asn Thr Asp Asn Tyr  Val Ser Leu
    1010                1015                1020

Asp Asp  Gln Phe Ile Arg Leu  Tyr Glu Arg Gly Val  Ala Arg Ala
    1025                1030                1035

Phe Leu  Gly His Tyr Arg Arg  Ser Asp Gly Ala Val  Gln Pro Thr
    1040                1045                1050

Phe Ile  Leu Gly Ser Asp Glu  Lys Thr Asn Ala Pro  Glu Gly Thr
    1055                1060                1065

Leu Phe  Met Ser Gln Ala Gly  Ala Gly Trp Ser Gly  Ala Tyr Ala
    1070                1075                1080

Ser Ile  Gly Ile Ser Asn Gly  Ile Val Asp Gly Ala  Val Gln Lys
    1085                1090                1095

Ser Val  Tyr Trp Glu Leu Gln  Arg Asn Gly Leu Ser  Val Leu Asn
    1100                1105                1110

Ala Asn  Asp Tyr His Val Phe  Tyr Ala Gly Asn Gly  Asn Trp Tyr
    1115                1120                1125

Phe Arg  Arg Gly Lys Pro Gly  Leu Tyr Gln Thr Ser  Leu Val Val
    1130                1135                1140

Glu Asp  Asn Ser Thr Asp Ser  Asp Leu Arg Leu Pro  Asn Val Thr
    1145                1150                1155

Ile Arg  Asn Ser Arg Ala Ala  Gly Tyr Thr Gly Val  Ile Gln Leu
    1160                1165                1170

Lys Ser  Pro Val Thr Gln Asn  Gly Trp Gly Ala Val  Gln Gly Asn
    1175                1180                1185
```

```
Phe Met  Thr Pro Ser Leu Arg  Glu Tyr Lys Ser Asn  Ile Arg Asp
    1190                 1195                 1200

Ile Ser  Phe Ser Ala Leu Glu  Lys Ile Arg Ser Leu  Lys Ile Arg
    1205                 1210                 1215

Gln Phe  Asn Tyr Lys Asn Ala  Val Asn Glu Leu Tyr  Arg Met Arg
    1220                 1225                 1230

Glu Glu  Lys Ser Pro Asn Asp  Pro Pro Leu Thr Thr  Glu Asp Ile
    1235                 1240                 1245

Lys Thr  Tyr Tyr Gly Leu Ile  Val Asp Glu Cys Asp  Glu Met Phe
    1250                 1255                 1260

Val Asp  Glu Ser Gly Lys Gly  Ile His Leu Tyr Ser  Tyr Ala Ser
    1265                 1270                 1275

Ile Gly  Ile Lys Gly Leu Gln  Glu Val Asp Ala Thr  Val Gln Glu
    1280                 1285                 1290

Gln Glu  Val Glu Ile Ala Asn  Leu Lys Ser Gln Ile  Ala Ser Gln
    1295                 1300                 1305

Glu Asp  Arg Ile Ala Arg Leu  Glu Glu Leu Leu Leu  Gln Gln Leu
    1310                 1315                 1320

Ile Asn  Lys Lys Pro Glu Gln  Pro
    1325                 1330
```

<210> 32
<211> 1331
<212> PRT
<213> Bacillus anthracis

<400> 32

```
Met Arg Thr Pro Ser Gly Ile Leu His Val Val Asp Phe Lys Thr Asp
1               5                  10                  15

Gln Ile Val Ala Ala Ile Gln Pro Glu Asp Tyr Trp Asp Asp Lys Arg
            20                  25                  30

His Trp Glu Leu Lys Asn Asn Val Asp Met Leu Asp Phe Thr Ala Phe
        35                  40                  45

Asp Gly Thr Asp His Ala Val Thr Leu Gln Gln Gln Asn Leu Val Leu
    50                  55                  60

Lys Glu Val Arg Asp Gly Arg Ile Val Pro Tyr Val Ile Thr Glu Thr
65                  70                  75                  80
```

```
Glu Lys Asn Ser Asp Thr Arg Ser Ile Thr Thr Tyr Ala Ser Gly Ala
                85                  90                  95

Trp Ile Gln Ile Ala Lys Ser Gly Ile Ile Lys Pro Gln Arg Ile Glu
            100                 105                 110

Ser Lys Thr Val Asn Glu Phe Met Asp Leu Ala Leu Leu Gly Met Lys
        115                 120                 125

Trp Lys Arg Gly Ile Thr Glu Tyr Ala Gly Phe His Thr Met Thr Ile
    130                 135                 140

Asp Glu Tyr Ile Asp Pro Leu Thr Phe Leu Lys Lys Ile Ala Ser Leu
145                 150                 155                 160

Phe Lys Leu Glu Ile Arg Tyr Arg Val Glu Ile Lys Gly Ser Arg Ile
                165                 170                 175

Ile Gly Trp Tyr Val Asp Met Ile Gln Lys Arg Gly His Asp Thr Gly
            180                 185                 190

Lys Glu Ile Glu Leu Gly Lys Asp Leu Val Gly Val Thr Arg Ile Glu
        195                 200                 205

His Thr Arg Asn Ile Cys Ser Ala Leu Val Gly Phe Val Lys Gly Glu
    210                 215                 220

Gly Asp Lys Val Ile Thr Ile Glu Ser Ile Asn Lys Gly Leu Pro Tyr
225                 230                 235                 240

Ile Val Asp Ala Asp Ala Phe Gln Arg Trp Asn Glu His Gly Gln His
                245                 250                 255

Lys Phe Gly Phe Tyr Thr Pro Glu Thr Glu Glu Leu Asp Met Thr Pro
            260                 265                 270

Lys Arg Leu Leu Thr Leu Met Glu Ile Glu Leu Lys Lys Arg Val Asn
        275                 280                 285

Ser Ser Ile Ser Tyr Glu Val Glu Ala Gln Ser Ile Gly Arg Ile Phe
    290                 295                 300

Gly Leu Glu His Glu Leu Ile Asn Glu Gly Asp Thr Ile Lys Ile Lys
305                 310                 315                 320

Asp Thr Gly Phe Thr Pro Glu Leu Tyr Leu Glu Ala Arg Val Ile Ala
                325                 330                 335

Gly Asp Glu Ser Phe Thr Asp Ser Thr Gln Asp Lys Tyr Glu Phe Gly
```

340 345 350

Asp Tyr Arg Glu Ile Val Asn Gln Asn Glu Glu Leu Arg Lys Ile Tyr
355 360 365

Asn Arg Ile Leu Ser Ser Leu Gly Asn Lys Gln Glu Met Ile Asp Gln
370 375 380

Leu Asp Arg Leu Val Gln Glu Ala Asn Glu Thr Ala Ser Asn Ala Lys
385 390 395 400

Lys Glu Ser Glu Ala Ala Lys Thr Leu Ala Glu Lys Val Gln Glu Asn
405 410 415

Ile Lys Asn Asn Thr Val Glu Ile Ile Glu Ser Lys Asn Pro Pro Thr
420 425 430

Thr Gly Leu Lys Pro Phe Lys Thr Leu Trp Arg Asp Ile Ser Ile Gly
435 440 445

Lys Pro Gly Ile Leu Lys Ile Trp Thr Gly Thr Ala Trp Glu Ser Val
450 455 460

Val Pro Asp Val Glu Ser Val Lys Lys Glu Thr Leu Asp Gln Val Asn
465 470 475 480

Lys Asp Ile Ala Thr Thr Lys Thr Glu Leu Asn Gln Lys Val Gln Glu
485 490 495

Ala Gln Asn Gln Ala Thr Gly Gln Phe Asn Glu Val Lys Glu Ser Leu
500 505 510

Gln Gly Val Ser Arg Thr Ile Ser Asn Val Glu Asn Lys Gln Gly Glu
515 520 525

Ile Asp Lys Lys Ile Thr Lys Phe Glu Gln Asp Ser Ser Gly Phe Lys
530 535 540

Thr Ser Ile Glu Ser Leu Thr Lys Lys Asp Thr Glu Ile Ser Asn Lys
545 550 555 560

Leu Asn Thr Val Glu Ser Thr Val Glu Gly Thr Lys Lys Thr Ile Ser
565 570 575

Glu Val Gln Gln Thr Thr Asn Asp Leu Lys Lys Lys Thr Thr Glu Ile
580 585 590

Glu Glu Lys Ala Gly Lys Ile Thr Glu Lys Leu Thr Ser Leu Glu Thr
595 600 605

```
Arg Glu Val Asn Val Arg Asn Tyr Val Ile Asn Ser Asp Phe Ser Asn
    610                 615                 620

Val Thr Asn Ser Trp Ile Gly Ile Thr Asn Ala Thr Leu Phe Lys Phe
625                 630                 635                 640

Val Asp Val Asn Ile Ser Glu Ala Ser Ala Ile Lys Lys Gly Leu Gln
                645                 650                 655

Ile Thr Ser Asn Lys Ala Phe Val Tyr Gln Lys Leu Pro Ala Asp Val
            660                 665                 670

Phe Lys Lys Lys Lys Gly Ile Ala Ser Cys Tyr Ile Asn Val Ser Ser
        675                 680                 685

Phe Thr Pro Gly Thr Asp Tyr Pro Arg Leu Tyr Met Arg Phe Thr Tyr
    690                 695                 700

Asp Gln Asn Gly Thr Glu Lys Gln Tyr Tyr Ala Ile Leu Lys Gln Gln
705                 710                 715                 720

Glu Val Thr Asn Gly Trp Ile Arg Ile Ser Ile Pro Phe Asp Thr Thr
                725                 730                 735

Gly Tyr Thr Gly Glu Leu Lys Glu Val Arg Val Asn Ile Ala Thr Ala
            740                 745                 750

Asp Thr Thr Thr Ile Asp Ala Thr Phe Thr Gly Ile Met Val Thr Phe
        755                 760                 765

Gly Asp Leu Ile Glu Ser Trp Asn Leu Ala Pro Glu Asp Gly Val Thr
    770                 775                 780

Gln Gly Val Phe Gln Ser Lys Thr Thr Glu Ile Glu Lys Ser Val Asp
785                 790                 795                 800

Gly Val Lys Thr Thr Val Thr Asn Val Gln Asn Ser Gln Ala Gly Phe
                805                 810                 815

Glu Lys Arg Met Ser Asn Val Glu Gln Thr Ala Thr Gly Leu Ser Ser
            820                 825                 830

Thr Val Ser Asn Leu Asn Asn Val Val Ser Asp Gln Gly Lys Lys Leu
        835                 840                 845

Thr Glu Ala Asn Thr Lys Leu Glu Gln Gln Ala Thr Ala Ile Gly Ala
    850                 855                 860

Lys Val Glu Leu Lys Gln Val Glu Asp Tyr Val Ala Gly Phe Lys Ile
865                 870                 875                 880
```

```
Pro Glu Leu Lys Gln Thr Val Asp Lys Asn Lys Gln Asp Leu Leu Asp
                885                 890                 895

Glu Leu Ala Asn Lys Leu Ala Thr Glu Gln Phe Asn Gln Lys Met Thr
            900                 905                 910

Leu Ile Asp Asn Arg Phe Thr Ile Asn Glu Gln Gly Ile Asn Ala Ala
        915                 920                 925

Ala Lys Lys Thr Glu Val Tyr Thr Lys Thr Gln Ala Asp Gly Gln Phe
    930                 935                 940

Ala Thr Asp Ser Tyr Val Arg Asp Met Glu Ser Arg Leu Gln Leu Thr
945                 950                 955                 960

Glu Lys Gly Val Ser Ile Ser Val Lys Glu Asn Asp Val Ile Ala Ala
                965                 970                 975

Ile Asn Met Ser Lys Glu Asn Ile Lys Leu Asn Ala Ala Arg Ile Asp
            980                 985                 990

Leu Val Gly Lys Val Asn Ala Glu  Trp Ile Lys Ala Gly  Leu Leu Ser
        995                 1000                1005

Gly Cys  Gln Ile Arg Thr Ser  Asn Thr Asp Asn Tyr  Val Ser Leu
    1010                1015                1020

Asp Asp  Gln Phe Ile Arg Leu  Tyr Glu Arg Gly Val  Ala Arg Ala
    1025                1030                1035

Phe Leu  Gly His Tyr Arg Arg  Ser Asp Gly Ala Val  Gln Pro Thr
    1040                1045                1050

Phe Ile  Leu Gly Ser Asp Glu  Lys Thr Asn Ala Pro  Glu Gly Thr
    1055                1060                1065

Leu Phe  Met Ser Gln Ala Gly  Ala Gly Trp Ser Gly  Ala Tyr Ala
    1070                1075                1080

Ser Ile  Gly Ile Ser Asn Gly  Ile Val Asp Gly Ala  Val Gln Lys
    1085                1090                1095

Ser Val  Tyr Trp Glu Leu Gln  Arg Asn Gly Leu Ser  Val Leu Asn
    1100                1105                1110

Ala Asn  Asp Tyr His Val Phe  Tyr Ala Gly Asn Gly  Asn Trp Tyr
    1115                1120                1125

Phe Arg  Arg Gly Lys Pro Gly  Leu Tyr Gln Thr Ser  Leu Val Val
    1130                1135                1140
```

```
Glu Asp  Asn Ser Thr Asp Ser  Asp Leu Arg Leu Pro  Asn Val Thr
    1145                1150                1155

Ile Arg  Asn Ser Arg Ala Ala  Gly Tyr Thr Gly Val  Ile Gln Leu
    1160                1165                1170

Lys Ser  Pro Val Thr Gln Asn  Gly Trp Gly Ala Val  Gln Gly Asn
    1175                1180                1185

Phe Met  Thr Pro Ser Leu Arg  Glu Tyr Lys Ser Asn  Ile Arg Asp
    1190                1195                1200

Ile Ser  Phe Ser Ala Leu Glu  Lys Ile Arg Ser Leu  Lys Ile Arg
    1205                1210                1215

Gln Phe  Asn Tyr Lys Asn Ala  Val Asn Glu Leu Tyr  Arg Met Arg
    1220                1225                1230

Glu Glu  Lys Ser Pro Asn Asp  Pro Pro Leu Thr Thr  Glu Asp Ile
    1235                1240                1245

Lys Thr  Tyr Tyr Gly Leu Ile  Val Asp Glu Cys Asp  Glu Met Phe
    1250                1255                1260

Val Asp  Glu Ser Gly Lys Gly  Ile His Leu Tyr Ser  Tyr Ala Ser
    1265                1270                1275

Ile Gly  Ile Lys Gly Leu Gln  Glu Val Asp Ala Thr  Val Gln Glu
    1280                1285                1290

Gln Glu  Val Glu Ile Ala Asn  Leu Lys Ser Gln Ile  Ala Ser Gln
    1295                1300                1305

Glu Asp  Arg Ile Ala Arg Leu  Glu Glu Leu Leu Leu  Gln Gln Leu
    1310                1315                1320

Ile Asn  Lys Lys Pro Glu Gln  Pro
    1325                1330
```

<210> 33
<211> 141
<212> PRT
<213> Bacillus anthracis

<400> 33

```
Met Asp Arg Ile Asp Val Leu Leu Lys Ala Phe Ile Ala Ala Phe Gly
1               5                  10                  15

Gly Phe Cys Gly Tyr Phe Leu Gly Gly Trp Asp Ala Thr Leu Lys Ile
            20                  25                  30
```

```
Leu Val Thr Met Val Val Ile Asp Tyr Leu Thr Gly Met Ile Ala Ala
        35                  40                  45

Gly Tyr Asn Gly Glu Leu Lys Ser Lys Val Gly Phe Lys Gly Ile Ala
    50                  55                  60

Lys Lys Val Val Leu Phe Leu Leu Val Gly Ala Ala Ala Gln Leu Asp
65                  70                  75                  80

Ser Ala Leu Gly Ser Asn Ser Ala Ile Arg Glu Ala Thr Ile Phe Phe
                85                  90                  95

Phe Met Gly Asn Glu Leu Leu Ser Leu Leu Glu Asn Ala Gly Arg Met
            100                 105                 110

Gly Ile Pro Leu Pro Gln Ala Leu Thr Asn Ala Val Glu Ile Leu Gly
        115                 120                 125

Gly Lys Gln Lys Gln Glu Glu Lys Lys Gly Asp Val Gln
    130                 135                 140
```

<210> 34
<211> 141
<212> PRT
<213> Bacillus anthracis

<400> 34

```
Met Asp Arg Ile Asp Val Leu Leu Lys Ala Phe Ile Ala Ala Phe Gly
1               5                   10                  15

Gly Phe Cys Gly Tyr Phe Leu Gly Gly Trp Asp Ala Thr Leu Lys Ile
            20                  25                  30

Leu Val Thr Met Val Val Ile Asp Tyr Leu Thr Gly Met Ile Ala Ala
        35                  40                  45

Gly Tyr Asn Gly Glu Leu Lys Ser Lys Val Gly Phe Lys Gly Ile Ala
    50                  55                  60

Lys Lys Val Val Leu Phe Leu Leu Val Gly Ala Ala Ala Gln Leu Asp
65                  70                  75                  80

Ser Ala Leu Gly Ser Asn Ser Ala Ile Arg Glu Ala Thr Ile Phe Phe
                85                  90                  95

Phe Met Gly Asn Glu Leu Leu Ser Leu Leu Glu Asn Ala Gly Arg Met
            100                 105                 110

Gly Ile Pro Leu Pro Gln Ala Leu Thr Asn Ala Val Glu Ile Leu Gly
        115                 120                 125
```

Gly Lys Gln Lys Gln Glu Glu Lys Lys Gly Asp Val Gln
130 135 140

<210> 35
<211> 233
<212> PRT
<213> Bacillus anthracis

<400> 35

Met Glu Ile Gln Lys Lys Leu Val Asp Pro Ser Lys Tyr Gly Thr Lys
1 5 10 15

Cys Pro Tyr Thr Met Lys Pro Lys Tyr Ile Thr Val His Asn Thr Tyr
20 25 30

Asn Asp Ala Pro Ala Glu Asn Glu Val Ser Tyr Met Ile Ser Asn Asn
35 40 45

Asn Glu Val Ser Phe His Ile Ala Val Asp Asp Lys Lys Ala Ile Gln
50 55 60

Gly Ile Pro Leu Glu Arg Asn Ala Trp Ala Cys Gly Asp Gly Asn Gly
65 70 75 80

Ser Gly Asn Arg Gln Ser Ile Ser Val Glu Ile Cys Tyr Ser Lys Ser
85 90 95

Gly Gly Asp Arg Tyr Tyr Lys Ala Glu Asp Asn Ala Val Asp Val Val
100 105 110

Arg Gln Leu Met Ser Met Tyr Asn Ile Pro Ile Glu Asn Val Arg Thr
115 120 125

His Gln Ser Trp Ser Gly Lys Tyr Cys Pro His Arg Met Leu Ala Glu
130 135 140

Gly Arg Trp Gly Ala Phe Ile Gln Lys Val Lys Asn Gly Asn Val Ala
145 150 155 160

Thr Thr Ser Pro Thr Lys Gln Asn Ile Ile Gln Ser Gly Ala Phe Ser
165 170 175

Pro Tyr Glu Thr Pro Asp Val Met Gly Ala Leu Thr Ser Leu Lys Met
180 185 190

Thr Ala Asp Phe Ile Leu Gln Ser Asp Gly Leu Thr Tyr Phe Ile Ser
195 200 205

Lys Pro Thr Ser Asp Ala Gln Leu Lys Ala Met Lys Glu Tyr Leu Asp
210 215 220

Arg Lys Gly Trp Trp Tyr Glu Val Lys
225 230

<210> 36
<211> 233
<212> PRT
<213> Bacillus anthracis

<400> 36

Met Glu Ile Gln Lys Lys Leu Val Asp Pro Ser Lys Tyr Gly Thr Lys
1 5 10 15

Cys Pro Tyr Thr Met Lys Pro Lys Tyr Ile Thr Val His Asn Thr Tyr
20 25 30

Asn Asp Ala Pro Ala Glu Asn Glu Val Ser Tyr Met Ile Ser Asn Asn
35 40 45

Asn Glu Val Ser Phe His Ile Ala Val Asp Asp Lys Lys Ala Ile Gln
50 55 60

Gly Ile Pro Leu Glu Arg Asn Ala Trp Ala Cys Gly Asp Gly Asn Gly
65 70 75 80

Ser Gly Asn Arg Gln Ser Ile Ser Val Glu Ile Cys Tyr Ser Lys Ser
85 90 95

Gly Gly Asp Arg Tyr Tyr Lys Ala Glu Asp Asn Ala Val Asp Val Val
100 105 110

Arg Gln Leu Met Ser Met Tyr Asn Ile Pro Ile Glu Asn Val Arg Thr
115 120 125

His Gln Ser Trp Ser Gly Lys Tyr Cys Pro His Arg Met Leu Ala Glu
130 135 140

Gly Arg Trp Gly Ala Phe Ile Gln Lys Val Lys Asn Gly Asn Val Ala
145 150 155 160

Thr Thr Ser Pro Thr Lys Gln Asn Ile Ile Gln Ser Gly Ala Phe Ser
165 170 175

Pro Tyr Glu Thr Pro Asp Val Met Gly Ala Leu Thr Ser Leu Lys Met
180 185 190

Thr Ala Asp Phe Ile Leu Gln Ser Asp Gly Leu Thr Tyr Phe Ile Ser
195 200 205

Lys Pro Thr Ser Asp Ala Gln Leu Lys Ala Met Lys Glu Tyr Leu Asp
210 215 220

Arg Lys Gly Trp Trp Tyr Glu Val Lys
225 230

<210> 37
<211> 165
<212> PRT
<213> Bacillus anthracis

<400> 37

Met Lys Met Tyr Lys Lys Leu Ile Ser Ile Cys Ile Gly Ser Thr Leu
1 5 10 15

Leu Leu Gly Leu Thr Ala Cys Asp Ser Ser Lys Gln Ser Glu Ser Ser
20 25 30

Glu Lys Thr Asn Val Lys Ser Gln Pro Glu Thr Lys Lys Asp Leu Thr
35 40 45

Ser Gln Asp Glu Leu Asn Lys Lys Ile Lys Gln Asp Ala Glu Glu Val
50 55 60

Ser Phe Val Lys Ala Asn Gly Asp Gln Tyr Glu Lys Gly Lys Arg Leu
65 70 75 80

Lys Ala Thr Gly Thr Val Asp Leu Leu Leu Lys Ser Ser Ala Leu Pro
85 90 95

Ser Phe Val Ile Ser Thr Asn Glu Asn Asp Gly Lys Gly Met Tyr Thr
100 105 110

Ile Gln Ile Val Gln Ser Gly Val Gln Thr Asn Glu Asn Glu Ile Thr
115 120 125

Leu Lys Asn Gly Leu Lys Ile Ser Lys Gly Ser Ile Val Thr Ile Tyr
130 135 140

Gly Ala Tyr Asp Glu Lys Asp Lys Thr Gly Met Pro Lys Ile Ser Ala
145 150 155 160

Thr Val Ile Glu Gln
165

<210> 38
<211> 165
<212> PRT
<213> Bacillus anthracis

<400> 38

Met Lys Met Tyr Lys Lys Leu Ile Ser Ile Cys Ile Gly Ser Thr Leu
1 5 10 15

```
Leu Leu Gly Leu Thr Ala Cys Asp Ser Ser Lys Gln Ser Glu Ser Ser
            20                  25                  30

Glu Lys Thr Asn Val Lys Ser Gln Pro Glu Thr Lys Lys Asp Leu Thr
        35                  40                  45

Ser Gln Asp Glu Leu Asn Lys Lys Ile Lys Gln Asp Ala Glu Glu Val
    50                  55                  60

Ser Phe Val Lys Ala Asn Gly Asp Gln Tyr Glu Lys Gly Lys Arg Leu
65                  70                  75                  80

Lys Ala Thr Gly Thr Val Asp Leu Leu Leu Lys Ser Ser Ala Leu Pro
                85                  90                  95

Ser Phe Val Ile Ser Thr Asn Glu Asn Asp Gly Lys Gly Met Tyr Thr
            100                 105                 110

Ile Gln Ile Val Gln Ser Gly Val Gln Thr Asn Glu Asn Glu Ile Thr
        115                 120                 125

Leu Lys Asn Gly Leu Lys Ile Ser Lys Gly Ser Ile Val Thr Ile Tyr
    130                 135                 140

Gly Ala Tyr Asp Glu Lys Asp Lys Thr Gly Met Pro Lys Ile Ser Ala
145                 150                 155                 160

Thr Val Ile Glu Gln
                165


<210>  39
<211>  70
<212>  PRT
<213>  Bacillus anthracis

<400>  39
Val Arg Leu Lys Cys Lys Leu Arg Val Ile Phe Ala Glu Arg Glu Ile
1               5                   10                  15

Arg Gln Lys Glu Phe Ser Lys Leu Ile Gly Ile Ser Gln Thr Thr Met
            20                  25                  30

Ser Ser Leu Val Asn Asn Thr Thr Leu Pro Thr Phe Leu Thr Ala Tyr
        35                  40                  45

Lys Ile Ala Lys Glu Leu Lys Leu His Met Glu Glu Ile Trp Ile Glu
    50                  55                  60

Glu Glu Asn Glu Asn Val
65                  70
```

<210> 40
<211> 70
<212> PRT
<213> Bacillus anthracis

<400> 40

Val Arg Leu Lys Cys Lys Leu Arg Val Ile Phe Ala Glu Arg Glu Ile
1 5 10 15

Arg Gln Lys Glu Phe Ser Lys Leu Ile Gly Ile Ser Gln Thr Thr Met
20 25 30

Ser Ser Leu Val Asn Asn Thr Thr Leu Pro Thr Phe Leu Thr Ala Tyr
35 40 45

Lys Ile Ala Lys Glu Leu Lys Leu His Met Glu Glu Ile Trp Ile Glu
50 55 60

Glu Glu Asn Glu Asn Val
65 70

<210> 41
<211> 102
<212> PRT
<213> Bacillus anthracis

<400> 41

Met Arg Trp Gln Tyr Asn His Leu Asn Thr Thr Pro Tyr Leu His Pro
1 5 10 15

Ser Lys Glu Leu Cys Ser Met Tyr Asn Gly Ser Arg Ser Arg Ala Glu
20 25 30

Thr Glu Ser Ile Leu Asn His Met Lys Asn His Glu Val Tyr Asp Arg
35 40 45

Lys Glu Tyr Lys Gly Tyr Phe Ser Leu Ser Gln Val Leu Glu Glu Asp
50 55 60

Leu Tyr Gly Glu Glu Glu Asp Val Leu Asn Trp Glu Ile Leu Met Asp
65 70 75 80

Cys Tyr Asp Val Val Leu Thr Arg Lys Gly Ile Ala Phe Arg Glu Lys
85 90 95

Glu Glu Glu Glu Gln Ala
100

<210> 42
<211> 102
<212> PRT
<213> Bacillus anthracis

<400> 42

Met Arg Trp Gln Tyr Asn His Leu Asn Thr Thr Pro Tyr Leu His Pro
1 5 10 15

Ser Lys Glu Leu Cys Ser Met Tyr Asn Gly Ser Arg Ser Arg Ala Glu
20 25 30

Thr Glu Ser Ile Leu Asn His Met Lys Asn His Glu Val Tyr Asp Arg
35 40 45

Lys Glu Tyr Lys Gly Tyr Phe Ser Leu Ser Gln Val Leu Glu Glu Asp
50 55 60

Leu Tyr Gly Glu Glu Glu Asp Val Leu Asn Trp Glu Ile Leu Met Asp
65 70 75 80

Cys Tyr Asp Val Val Leu Thr Arg Lys Gly Ile Ala Phe Arg Glu Lys
85 90 95

Glu Glu Glu Glu Gln Ala
100

<210> 43
<211> 60
<212> PRT
<213> Bacillus anthracis

<400> 43

Met Thr Leu Ala Gly Glu Ala Ile Ile Ile Trp Thr Ala Thr Gly Leu
1 5 10 15

Ser Val Val Ala Met Lys Ala Ala Glu Lys Met Gly Lys Ser Val Pro
20 25 30

His Trp Leu Pro Arg Val Thr Leu Tyr Thr Thr Leu Thr Gly Ser Phe
35 40 45

Leu Tyr Leu Leu Arg Tyr Val Leu Val Leu Phe Leu
50 55 60

<210> 44
<211> 60
<212> PRT
<213> Bacillus anthracis

<400> 44

Met Thr Leu Ala Gly Glu Ala Ile Ile Ile Trp Thr Ala Thr Gly Leu
1 5 10 15

Ser Val Val Ala Met Lys Ala Ala Glu Lys Met Gly Lys Ser Val Pro
20 25 30

```
His Trp Leu Pro Arg Val Thr Leu Tyr Thr Thr Leu Thr Gly Ser Phe
        35                  40                  45

Leu Tyr Leu Leu Arg Tyr Val Leu Val Leu Phe Leu
    50                  55                  60
```

<210> 45
<211> 429
<212> PRT
<213> Bacillus anthracis

<400> 45

```
Met Trp Lys Leu Phe Ile Pro Tyr Val Ile Arg Ser Leu Ala Cys Met
1               5                  10                  15

His Val Phe Leu Glu Thr Gly Ile Tyr Thr Leu Tyr Lys Arg Asp Ile
            20                  25                  30

Arg Ser Asp Phe Met Leu Glu Leu Leu Ser Val Pro Phe Ala Gly Leu
        35                  40                  45

Ile Phe Ala Ile Val Gly Glu Arg Leu Lys Gly Arg Glu Ser Asp Arg
    50                  55                  60

Lys Lys Ile Gln Val Phe Phe Glu Val Ser Gly Ile Ala Ile Arg Arg
65                  70                  75                  80

Glu Asp Lys Leu Gln Tyr Pro Val Phe Leu Glu Gln Lys Glu Asp Asp
                85                  90                  95

Arg Ser Thr Thr Tyr Ile Tyr Arg Leu Pro Val Gly Met Pro Ser Lys
            100                 105                 110

Ile Ile Gln Lys Val Glu Asp Val Val Ser Glu Gly Leu Ser Lys Pro
        115                 120                 125

Val Arg Ile Asp Tyr Asp Asn Tyr Lys Leu Asn Ile Arg Val Phe His
    130                 135                 140

Arg Asp Ile Pro Lys Lys Trp Ser Trp Ser Lys Gly Leu Val Ala Glu
145                 150                 155                 160

Gly Ser Trp Cys Val Pro Met Gly Gln Ser Leu Glu Lys Leu Ile Tyr
                165                 170                 175

His Asp Phe Asp Lys Thr Pro His Met Thr Leu Gly Gly Leu Thr Arg
            180                 185                 190

Met Gly Lys Thr Val Phe Leu Lys Asn Val Val Thr Ser Leu Thr Leu
        195                 200                 205
```

```
Ala Gln Pro Glu His Ile Asn Leu Tyr Ile Ile Asp Leu Lys Gly Gly
    210                 215                 220

Leu Glu Phe Gly Pro Tyr Lys Asn Leu Lys Gln Val Val Ser Ile Ala
225                 230                 235                 240

Glu Lys Pro Ala Glu Ala Phe Met Ile Leu Thr Asn Ile Leu Lys Lys
                245                 250                 255

Met Glu Glu Lys Met Glu Tyr Met Lys Cys Arg His Tyr Thr Asn Val
            260                 265                 270

Val Glu Thr Asn Ile Lys Glu Arg Tyr Phe Ile Ile Val Asp Glu Gly
        275                 280                 285

Ala Glu Leu Cys Pro Asp Lys Ser Met Lys Lys Glu Gln Gln Arg Leu
    290                 295                 300

Leu Gly Ala Cys Gln Gln Met Leu Ser His Ile Ala Arg Ile Gly Gly
305                 310                 315                 320

Ala Leu Gly Phe Arg Leu Ile Phe Cys Thr Gln Tyr Pro Thr Gly Asp
                325                 330                 335

Thr Leu Pro Arg Gln Val Lys Gln Asn Ser Asp Ala Lys Leu Gly Phe
            340                 345                 350

Arg Leu Pro Thr Gln Thr Ala Ser Ser Val Val Ile Asp Glu Ala Gly
        355                 360                 365

Leu Glu Thr Ile Lys Ser Ile Pro Gly Arg Ala Ile Phe Lys Thr Asp
    370                 375                 380

Arg Leu Thr Glu Ile Gln Val Pro Tyr Ile Ser Asn Glu Met Met Trp
385                 390                 395                 400

Glu His Leu Lys Gly Tyr Glu Val Glu Lys His Glu Asp Ala Asn Ala
                405                 410                 415

Tyr Ala Asn Gln Pro Ser Asn Gly Asp Thr Cys Asp Asp
            420                 425


<210>  46
<211>  429
<212>  PRT
<213>  Bacillus anthracis

<400>  46

Met Trp Lys Leu Phe Ile Pro Tyr Val Ile Arg Ser Leu Ala Cys Met
1                 5                  10                  15
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His Val Phe Leu Glu Thr Gly Ile Tyr Thr Leu Tyr Lys Arg Asp Ile
            20                  25                  30

Arg Ser Asp Phe Met Leu Glu Leu Leu Ser Val Pro Phe Ala Gly Leu
        35                  40                  45

Ile Phe Ala Ile Val Gly Glu Arg Leu Lys Gly Arg Glu Ser Asp Arg
    50                  55                  60

Lys Lys Ile Gln Val Phe Phe Glu Val Ser Gly Ile Ala Ile Arg Arg
65                  70                  75                  80

Glu Asp Lys Leu Gln Tyr Pro Val Phe Leu Glu Gln Lys Glu Asp Asp
                85                  90                  95

Arg Ser Thr Thr Tyr Ile Tyr Arg Leu Pro Val Gly Met Pro Ser Lys
            100                 105                 110

Ile Ile Gln Lys Val Glu Asp Val Val Ser Glu Gly Leu Ser Lys Pro
        115                 120                 125

Val Arg Ile Asp Tyr Asp Asn Tyr Lys Leu Asn Ile Arg Val Phe His
    130                 135                 140

Arg Asp Ile Pro Lys Lys Trp Ser Trp Ser Lys Gly Leu Val Ala Glu
145                 150                 155                 160

Gly Ser Trp Cys Val Pro Met Gly Gln Ser Leu Glu Lys Leu Ile Tyr
                165                 170                 175

His Asp Phe Asp Lys Thr Pro His Met Thr Leu Gly Gly Leu Thr Arg
            180                 185                 190

Met Gly Lys Thr Val Phe Leu Lys Asn Val Val Thr Ser Leu Thr Leu
        195                 200                 205

Ala Gln Pro Glu His Ile Asn Leu Tyr Ile Ile Asp Leu Lys Gly Gly
    210                 215                 220

Leu Glu Phe Gly Pro Tyr Lys Asn Leu Lys Gln Val Val Ser Ile Ala
225                 230                 235                 240

Glu Lys Pro Ala Glu Ala Phe Met Ile Leu Thr Asn Ile Leu Lys Lys
                245                 250                 255

Met Glu Glu Lys Met Glu Tyr Met Lys Cys Arg His Tyr Thr Asn Val
            260                 265                 270

Val Glu Thr Asn Ile Lys Glu Arg Tyr Phe Ile Ile Val Asp Glu Gly
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275 280 285

Ala Glu Leu Cys Pro Asp Lys Ser Met Lys Lys Glu Gln Gln Arg Leu
290 295 300

Leu Gly Ala Cys Gln Gln Met Leu Ser His Ile Ala Arg Ile Gly Gly
305 310 315 320

Ala Leu Gly Phe Arg Leu Ile Phe Cys Thr Gln Tyr Pro Thr Gly Asp
325 330 335

Thr Leu Pro Arg Gln Val Lys Gln Asn Ser Asp Ala Lys Leu Gly Phe
340 345 350

Arg Leu Pro Thr Gln Thr Ala Ser Ser Val Val Ile Asp Glu Ala Gly
355 360 365

Leu Glu Thr Ile Lys Ser Ile Pro Gly Arg Ala Ile Phe Lys Thr Asp
370 375 380

Arg Leu Thr Glu Ile Gln Val Pro Tyr Ile Ser Asn Glu Met Met Trp
385 390 395 400

Glu His Leu Lys Gly Tyr Glu Val Glu Lys His Glu Asp Ala Asn Ala
405 410 415

Tyr Ala Asn Gln Pro Ser Asn Gly Asp Thr Cys Asp Asp
420 425

<210> 47
<211> 210
<212> PRT
<213> Bacillus anthracis

<400> 47

Met Arg Trp Arg Asn Met Arg Met Gln Thr His Met Gln Ile Asn Arg
1 5 10 15

Gln Met Ala Ile Leu Ala Thr Ile Arg Lys Leu Gln Phe Ala Thr Arg
20 25 30

Arg His Leu Met Ser Ile His Glu Met Gly Gly Ile Arg Asn Ala Asn
35 40 45

Arg Ile Leu Lys Asp Leu Ser Ile Tyr Thr Ser Lys Val Val Tyr Asn
50 55 60

Lys Glu His Val Tyr Tyr Leu Asn Gln Ser Gly His Lys Leu Phe Gly
65 70 75 80

Glu Gly Lys Val Val His His Gly Lys Val Thr His Ala Leu Leu Arg

85 90 95

Asn Glu Ala Trp Leu Asn Leu Tyr Cys Pro Asp Asp Trp Gln Val Glu
100 105 110

Thr Glu Ile Lys Tyr Ile Lys Asp Asn Lys Lys Lys Lys Ile Ile Pro
115 120 125

Asp Val Lys Phe Arg Asp Glu Asp Arg Ile Leu His Ala Val Glu Ile
130 135 140

Asp Arg Thr Gln Lys Met Ile Val Asn Asp Glu Lys Leu Lys Lys Tyr
145 150 155 160

Glu Glu Leu Thr Gln Ile Tyr Lys Gln Lys His Asn Gly Lys Val Pro
165 170 175

Val Ile His Phe Phe Thr Ile Thr Lys Tyr Arg Glu Lys Lys Leu Glu
180 185 190

Glu Leu Ala Asn Lys Tyr Asn Val Phe Val Lys Val Tyr Val Ile Ala
195 200 205

Thr Thr
210

<210> 48
<211> 210
<212> PRT
<213> Bacillus anthracis

<400> 48

Met Arg Trp Arg Asn Met Arg Met Gln Thr His Met Gln Ile Asn Arg
1 5 10 15

Gln Met Ala Ile Leu Ala Thr Ile Arg Lys Leu Gln Phe Ala Thr Arg
20 25 30

Arg His Leu Met Ser Ile His Glu Met Gly Gly Ile Arg Asn Ala Asn
35 40 45

Arg Ile Leu Lys Asp Leu Ser Ile Tyr Thr Ser Lys Val Val Tyr Asn
50 55 60

Lys Glu His Val Tyr Tyr Leu Asn Gln Ser Gly His Lys Leu Phe Gly
65 70 75 80

Glu Gly Lys Val Val His His Gly Lys Val Thr His Ala Leu Leu Arg
85 90 95

Asn Glu Ala Trp Leu Asn Leu Tyr Cys Pro Asp Asp Trp Gln Val Glu

100 105 110

Thr Glu Ile Lys Tyr Ile Lys Asp Asn Lys Lys Lys Lys Ile Ile Pro
115 120 125

Asp Val Lys Phe Arg Asp Glu Asp Arg Ile Leu His Ala Val Glu Ile
130 135 140

Asp Arg Thr Gln Lys Met Ile Val Asn Asp Glu Lys Leu Lys Lys Tyr
145 150 155 160

Glu Glu Leu Thr Gln Ile Tyr Lys Gln Lys His Asn Gly Lys Val Pro
165 170 175

Val Ile His Phe Phe Thr Ile Thr Lys Tyr Arg Glu Lys Lys Leu Glu
180 185 190

Glu Leu Ala Asn Lys Tyr Asn Val Phe Val Lys Val Tyr Val Ile Ala
195 200 205

Thr Thr
210

<210> 49
<211> 78
<212> PRT
<213> Bacillus anthracis

<400> 49

Met Lys Phe Thr Leu Gly Asn Ser Leu Asp Glu Leu Gly Ile Thr Lys
1 5 10 15

Asn Lys Leu Ser Thr Glu Ser Gln Val Arg Tyr Asn Thr Ile Ser Asp
20 25 30

Leu Val Asn Gly Asn Ala Asn Ala Val Arg Phe Asp Ser Leu Glu Ala
35 40 45

Ile Ile Asp Ala Leu Asn Ala Ile Ala Ala Glu Lys Gly Ile Asn Lys
50 55 60

Ile Tyr Lys Ile Asp Asp Val Ile Gln Tyr Ile Lys Lys Ser
65 70 75

<210> 50
<211> 78
<212> PRT
<213> Bacillus anthracis

<400> 50

Met Lys Phe Thr Leu Gly Asn Ser Leu Asp Glu Leu Gly Ile Thr Lys
1 5 10 15

Asn Lys Leu Ser Thr Glu Ser Gln Val Arg Tyr Asn Thr Ile Ser Asp
20 25 30

Leu Val Asn Gly Asn Ala Asn Ala Val Arg Phe Asp Ser Leu Glu Ala
35 40 45

Ile Ile Asp Ala Leu Asn Ala Ile Ala Ala Glu Lys Gly Ile Asn Lys
50 55 60

Ile Tyr Lys Ile Asp Asp Val Ile Gln Tyr Ile Lys Lys Ser
65 70 75

<210> 51
<211> 75
<212> PRT
<213> Bacillus anthracis

<400> 51

Met Ala Phe Lys Ala Ser Met Ile Ala Ser Ser Glu Ser Lys Arg Thr
1 5 10 15

Ala Leu Ala Leu Pro Phe Thr Lys Ser Leu Ile Val Leu Tyr Leu Thr
20 25 30

Trp Asp Ser Val Asp Asn Leu Phe Leu Val Ile Pro Asn Ser Ser Lys
35 40 45

Glu Phe Pro Ser Val Asn Phe Ile Leu Phe Ser Ser Ala Ala Leu Val
50 55 60

Ile Leu Tyr Ser Phe Tyr Asn Ile Asn Arg Asn
65 70 75

<210> 52
<211> 78
<212> PRT
<213> Bacillus anthracis

<400> 52

Met Lys Phe Thr Leu Gly Asn Ser Leu Asp Glu Leu Gly Ile Thr Lys
1 5 10 15

Asn Lys Leu Ser Thr Glu Ser Gln Val Arg Tyr Asn Thr Ile Ser Asp
20 25 30

Leu Val Asn Gly Asn Ala Asn Ala Val Arg Phe Asp Ser Leu Glu Ala
35 40 45

Ile Ile Asp Ala Leu Asn Ala Ile Ala Ala Glu Lys Gly Ile Asn Lys
50 55 60

Ile Tyr Lys Ile Asp Asp Val Ile Gln Tyr Ile Lys Lys Ser
65 70 75

<210> 53
<211> 287
<212> PRT
<213> Bacillus anthracis

<400> 53

Met Leu Ser Ser Ala Asn Tyr Thr Gln Tyr Lys Lys Leu Gln Ser Phe
1 5 10 15

Arg Ser Val Glu Glu Met Asn Glu Ala Ile Cys Ser Phe Leu Tyr Lys
20 25 30

His Thr His Glu Leu Ser Glu Ser Ala Ile Lys Val Leu Lys Phe Leu
35 40 45

Ala Arg His Ser Cys Lys Ile Pro Gly Val Ser Phe Leu Lys Val Gly
50 55 60

Thr Ile Ala Glu Ala Leu Asn Ile Ser Asp Arg Thr Val Arg Arg Val
65 70 75 80

Leu Lys Val Leu Glu Asp Phe Glu Val Val Thr Arg His Lys Thr Ile
85 90 95

Arg Thr Glu Gly Lys Leu Arg Gly Gly Asn Gly His Asn Val Tyr Val
100 105 110

Leu Leu Lys Lys Tyr Ser Val Thr Pro Asn Val Leu Pro Lys Met Ser
115 120 125

Gln Arg Gln Asp Glu Glu Asn Leu Thr Glu Ser Lys Val Ser Asp Thr
130 135 140

Lys Thr Asp Lys Glu Ala Lys Leu Ser Glu Ser His Pro Leu Glu Glu
145 150 155 160

Leu Lys Ser Glu Leu Asn Val Lys Glu Thr Ser Ala Arg Glu Ser Lys
165 170 175

Glu Ile Glu Leu Glu Asp Leu Asp Glu Thr Phe Thr Pro Glu Asn Val
180 185 190

Pro Ser Gln Phe Arg Asp Val Val Ala Pro Phe Phe Lys Ser Ala Asp
195 200 205

Lys Ile Tyr Lys Leu Tyr His Arg Val Leu Ile Ala Tyr Lys Arg Ser
210 215 220

Lys Ile Asp Lys Pro Ile Glu Gln Val Ile Asn Gln Ala Ile Gln Ala
225 230 235 240

Phe Lys Glu Thr Val Phe Ala Glu Lys Ala Asn Lys Ile Arg Ser Thr
245 250 255

Phe Glu Gly Tyr Phe Tyr Arg Ile Val Glu Ser Lys Phe Val Met Glu
260 265 270

Arg Arg Lys Glu Cys Arg Gly Leu Leu Phe Asp Trp Leu Asn Glu
275 280 285

<210> 54
<211> 287
<212> PRT
<213> Bacillus anthracis

<400> 54

Met Leu Ser Ser Ala Asn Tyr Thr Gln Tyr Lys Lys Leu Gln Ser Phe
1 5 10 15

Arg Ser Val Glu Glu Met Asn Glu Ala Ile Cys Ser Phe Leu Tyr Lys
20 25 30

His Thr His Glu Leu Ser Glu Ser Ala Ile Lys Val Leu Lys Phe Leu
35 40 45

Ala Arg His Ser Cys Lys Ile Pro Gly Val Ser Phe Leu Lys Val Gly
50 55 60

Thr Ile Ala Glu Ala Leu Asn Ile Ser Asp Arg Thr Val Arg Arg Val
65 70 75 80

Leu Lys Val Leu Glu Asp Phe Glu Val Val Thr Arg His Lys Thr Ile
85 90 95

Arg Thr Glu Gly Lys Leu Arg Gly Gly Asn Gly His Asn Val Tyr Val
100 105 110

Leu Leu Lys Lys Tyr Ser Val Thr Pro Asn Val Leu Pro Lys Met Ser
115 120 125

Gln Arg Gln Asp Glu Glu Asn Leu Thr Glu Ser Lys Val Ser Asp Thr
130 135 140

Lys Thr Asp Lys Glu Ala Lys Leu Ser Glu Ser His Pro Leu Glu Glu
145 150 155 160

Leu Lys Ser Glu Leu Asn Val Lys Glu Thr Ser Ala Arg Glu Ser Lys
165 170 175

```
Glu Ile Glu Leu Glu Asp Leu Asp Glu Thr Phe Thr Pro Glu Asn Val
            180                 185                 190

Pro Ser Gln Phe Arg Asp Val Val Ala Pro Phe Phe Lys Ser Ala Asp
        195                 200                 205

Lys Ile Tyr Lys Leu Tyr His Arg Val Leu Ile Ala Tyr Lys Arg Ser
    210                 215                 220

Lys Ile Asp Lys Pro Ile Glu Gln Val Ile Asn Gln Ala Ile Gln Ala
225                 230                 235                 240

Phe Lys Glu Thr Val Phe Ala Glu Lys Ala Asn Lys Ile Arg Ser Thr
                245                 250                 255

Phe Glu Gly Tyr Phe Tyr Arg Ile Val Glu Ser Lys Phe Val Met Glu
            260                 265                 270

Arg Arg Lys Glu Cys Arg Gly Leu Leu Phe Asp Trp Leu Asn Glu
        275                 280                 285
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<210> 55
<211> 481
<212> PRT
<213> Bacillus anthracis

<400> 55

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Leu Lys Tyr Ala Val Tyr Val Arg Val Ser Thr Asp Arg Asp Glu Gln
1               5                   10                  15

Val Ser Ser Val Glu Asn Gln Ile Asp Ile Cys Arg Tyr Trp Leu Glu
            20                  25                  30

Lys Asn Gly Tyr Glu Trp Asp Pro Asn Ala Val Tyr Phe Asp Asp Gly
        35                  40                  45

Ile Ser Gly Thr Ala Trp Leu Glu Arg His Ala Met Gln Leu Ile Leu
    50                  55                  60

Glu Lys Ala Arg Arg Asn Glu Leu Asp Thr Val Val Phe Lys Ser Ile
65                  70                  75                  80

His Arg Leu Ala Arg Asp Leu Arg Asp Ala Leu Glu Ile Lys Glu Ile
                85                  90                  95

Leu Ile Gly His Gly Ile Arg Leu Val Thr Ile Glu Glu Asn Tyr Asp
            100                 105                 110

Ser Leu Tyr Glu Gly Gly Asn Asp Ile Lys Phe Glu Met Phe Ala Met
        115                 120                 125
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Phe Ala Ala Gln Leu Pro Lys Thr Ile Ser Val Ser Val Ser Ala Ala
    130                 135                 140

Met Gln Ala Lys Ala Arg Arg Gly Glu Phe Ile Gly Lys Pro Gly Leu
145                 150                 155                 160

Gly Tyr Asp Val Ile Asp Lys Lys Leu Val Ile Asn Glu Lys Glu Ala
                165                 170                 175

Glu Ile Val Arg Glu Ile Phe Asp Leu Ser Tyr Lys Gly Tyr Gly Phe
            180                 185                 190

Lys Lys Ile Ala Asn Ile Leu Asn Asp Lys Gly Thr Tyr Thr Lys Phe
        195                 200                 205

Gly Gln Leu Trp Ser His Thr Thr Val Gly Lys Ile Leu Lys Asn Gln
    210                 215                 220

Thr Tyr Lys Gly Asn Leu Val Leu Asn Ser Tyr Lys Thr Val Lys Val
225                 230                 235                 240

Asp Gly Lys Lys Lys Arg Val Tyr Thr Pro Lys Glu Arg Leu Thr Ile
                245                 250                 255

Ile Glu Asp His Tyr Pro Thr Ile Val Ser Lys Glu Leu Trp Asn Ala
            260                 265                 270

Val Asn Ser Asp Arg Ala Ser Lys Lys Lys Thr Lys Gln Asp Thr Arg
        275                 280                 285

Asn Glu Phe Arg Gly Met Met Phe Cys Lys His Cys Gly Glu Pro Ile
    290                 295                 300

Thr Ala Lys Tyr Ser Gly Arg Tyr Ala Lys Gly Ser Lys Lys Glu Trp
305                 310                 315                 320

Val Tyr Met Lys Cys Ser Asn Tyr Ile Arg Phe Asn Arg Cys Val Asn
                325                 330                 335

Phe Asp Pro Ala His Tyr Asp Asp Ile Arg Glu Ala Ile Ile Tyr Gly
            340                 345                 350

Leu Lys Gln Gln Glu Lys Glu Leu Glu Ile His Phe Asn Pro Lys Met
        355                 360                 365

His Gln Lys Arg Asn Asp Lys Ser Thr Glu Ile Lys Lys Gln Ile Lys
    370                 375                 380

Leu Leu Lys Val Lys Lys Glu Lys Leu Ile Asp Leu Tyr Val Glu Gly
385                 390                 395                 400
```

Leu Ile Asp Lys Glu Met Phe Ser Lys Arg Asp Leu Asn Phe Glu Asn
405 410 415

Glu Ile Lys Glu Gln Glu Leu Ala Leu Leu Lys Leu Thr Asp Gln Asn
420 425 430

Lys Arg Asn Lys Glu Glu Lys Lys Ile Lys Glu Ala Phe Ser Met Leu
435 440 445

Asp Glu Glu Lys Asp Met His Glu Val Phe Lys Thr Leu Ile Lys Lys
450 455 460

Ile Thr Leu Ser Lys Asp Lys Tyr Ile Asp Ile Glu Tyr Thr Phe Ser
465 470 475 480

Leu

<210> 56
<211> 481
<212> PRT
<213> Bacillus anthracis

<400> 56

Leu Lys Tyr Ala Val Tyr Val Arg Val Ser Thr Asp Arg Asp Glu Gln
1 5 10 15

Val Ser Ser Val Glu Asn Gln Ile Asp Ile Cys Arg Tyr Trp Leu Glu
20 25 30

Lys Asn Gly Tyr Glu Trp Asp Pro Asn Ala Val Tyr Phe Asp Asp Gly
35 40 45

Ile Ser Gly Thr Ala Trp Leu Glu Arg His Ala Met Gln Leu Ile Leu
50 55 60

Glu Lys Ala Arg Arg Asn Glu Leu Asp Thr Val Val Phe Lys Ser Ile
65 70 75 80

His Arg Leu Ala Arg Asp Leu Arg Asp Ala Leu Glu Ile Lys Glu Ile
85 90 95

Leu Ile Gly His Gly Ile Arg Leu Val Thr Ile Glu Glu Asn Tyr Asp
100 105 110

Ser Leu Tyr Glu Gly Gly Asn Asp Ile Lys Phe Glu Met Phe Ala Met
115 120 125

Phe Ala Ala Gln Leu Pro Lys Thr Ile Ser Val Ser Val Ser Ala Ala
130 135 140

Met Gln Ala Lys Ala Arg Arg Gly Glu Phe Ile Gly Lys Pro Gly Leu
145 150 155 160

Gly Tyr Asp Val Ile Asp Lys Lys Leu Val Ile Asn Glu Lys Glu Ala
165 170 175

Glu Ile Val Arg Glu Ile Phe Asp Leu Ser Tyr Lys Gly Tyr Gly Phe
180 185 190

Lys Lys Ile Ala Asn Ile Leu Asn Asp Lys Gly Thr Tyr Thr Lys Phe
195 200 205

Gly Gln Leu Trp Ser His Thr Thr Val Gly Lys Ile Leu Lys Asn Gln
210 215 220

Thr Tyr Lys Gly Asn Leu Val Leu Asn Ser Tyr Lys Thr Val Lys Val
225 230 235 240

Asp Gly Lys Lys Lys Arg Val Tyr Thr Pro Lys Glu Arg Leu Thr Ile
245 250 255

Ile Glu Asp His Tyr Pro Thr Ile Val Ser Lys Glu Leu Trp Asn Ala
260 265 270

Val Asn Ser Asp Arg Ala Ser Lys Lys Lys Thr Lys Gln Asp Thr Arg
275 280 285

Asn Glu Phe Arg Gly Met Met Phe Cys Lys His Cys Gly Glu Pro Ile
290 295 300

Thr Ala Lys Tyr Ser Gly Arg Tyr Ala Lys Gly Ser Lys Lys Glu Trp
305 310 315 320

Val Tyr Met Lys Cys Ser Asn Tyr Ile Arg Phe Asn Arg Cys Val Asn
325 330 335

Phe Asp Pro Ala His Tyr Asp Asp Ile Arg Glu Ala Ile Ile Tyr Gly
340 345 350

Leu Lys Gln Gln Glu Lys Glu Leu Glu Ile His Phe Asn Pro Lys Met
355 360 365

His Gln Lys Arg Asn Asp Lys Ser Thr Glu Ile Lys Lys Gln Ile Lys
370 375 380

Leu Leu Lys Val Lys Lys Glu Lys Leu Ile Asp Leu Tyr Val Glu Gly
385 390 395 400

Leu Ile Asp Lys Glu Met Phe Ser Lys Arg Asp Leu Asn Phe Glu Asn

405 410 415

Glu Ile Lys Glu Gln Glu Leu Ala Leu Leu Lys Leu Thr Asp Gln Asn
420 425 430

Lys Arg Asn Lys Glu Glu Lys Lys Ile Lys Glu Ala Phe Ser Met Leu
435 440 445

Asp Glu Glu Lys Asp Met His Glu Val Phe Lys Thr Leu Ile Lys Lys
450 455 460

Ile Thr Leu Ser Lys Asp Lys Tyr Ile Asp Ile Glu Tyr Thr Phe Ser
465 470 475 480

Leu

<210> 57
<211> 42
<212> PRT
<213> Bacillus anthracis

<400> 57

Val Ile Ile Val Glu Phe Lys Asp Arg Leu Arg Gln Leu Arg Arg Glu
1 5 10 15

Arg Asn Leu Thr Gln His Asp Leu Gly Gln Ala Ile Gly Val Thr Ala
20 25 30

Gly Ser Ile Thr Val Thr Asn Asn Gln Leu
35 40

<210> 58
<211> 444
<212> PRT
<213> Bacillus anthracis

<400> 58

Met Arg Ile Ala Leu Tyr Arg Thr His Ala Leu Ile Asn Val Ile Lys
1 5 10 15

Tyr Ser Val Asn Ile Met Glu Lys Val Leu Leu Ile Glu Met Lys Gly
20 25 30

Val Ser Tyr Leu Lys Phe His Glu Lys Ile Met Gly Met Ile Glu Asp
35 40 45

Arg Asp Asp Leu Thr Ala Thr Ser Val Ala Cys Lys Ile Gly Val Ser
50 55 60

Lys Gln Tyr Met Ser Lys Phe Lys Arg Gln Gly Thr Ile Gly Phe Ser
65 70 75 80

```
Gln Leu Leu Lys Leu Ala Pro Ile Leu Ser Val Glu Gly Lys Lys Ala
                85                  90                  95

Lys Gln Thr Met Ser Asp Trp Cys Leu Glu Leu Asp Thr Thr Glu Ser
            100                 105                 110

Ile Lys Gln Ser Phe Glu Tyr Ala Cys Leu Thr Arg Asn Thr Ile Leu
        115                 120                 125

Leu Lys Gln Leu Ile Gln Lys His Ser Lys Glu Thr Gly Thr Ile Arg
    130                 135                 140

Glu Tyr Val Glu Val Tyr Thr Ile Leu Phe Lys Tyr Ile Lys Asn Ile
145                 150                 155                 160

Ile Lys Gly Ser Glu Ile Thr Lys Glu Leu Lys Lys Ile Gly Ala Ile
                165                 170                 175

Lys Asp Lys Val Leu Glu Ile Leu Thr Lys Ile Met Glu Cys Tyr Glu
            180                 185                 190

Tyr Tyr His Leu Lys Lys Phe Asn Leu Met Leu Glu Thr Ala Glu Thr
        195                 200                 205

Ile Asp Ser Leu Val Arg Glu Ile Glu Gly Glu Arg Lys Ser Phe Ile
    210                 215                 220

Lys Glu Cys Tyr Asn Tyr Arg Ile Ala Glu Leu Phe Ala Pro Ile Phe
225                 230                 235                 240

Leu Gln Lys Asn Asn Val Asp Leu Ala Arg Lys Tyr Ala His Phe Leu
                245                 250                 255

Ile His Ala Asn Val Cys Thr Lys Thr Val Ser Asp Ala Tyr Tyr Ile
            260                 265                 270

Leu Gly Met Ser Asn Val Leu Glu Ser Lys Glu Gln Cys Leu Phe Asn
        275                 280                 285

Leu Lys Lys Ser Tyr Leu Leu Ser Lys Glu Ile Arg Asp Ala Asp Ile
    290                 295                 300

Glu Gln Glu Ala Arg Tyr Asn Leu Asp Val Ala Lys Ile Tyr Phe Gly
305                 310                 315                 320

Val Lys Leu Asp Glu Asp Ala Asp Ser Arg Leu Leu Leu Tyr Gln Lys
                325                 330                 335

Asn Pro Thr Cys Glu Leu Ser Ile Ile Ala Leu Gln Asp Ile Ile Arg
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340 345 350

Asp Arg Gly Asp Lys Asp Phe Leu Asn Tyr Phe Ile Ala Cys Ser Ser
355 360 365

Asp Glu Ile Glu Cys Leu Tyr Asp Leu Phe Tyr Gln Tyr Phe Tyr Gln
370 375 380

Ala Asn Tyr Leu Phe Ser Ala Ile Val Ala Lys Glu Leu Cys Asn Arg
385 390 395 400

Gly Asp Lys Ser Leu Leu Thr Gln Ser Met Val Asn Leu Gly Asn Glu
405 410 415

Lys Gln Lys Gly Val Val Asp Ile Glu Glu Ile Ser Ile Ser Ser Leu
420 425 430

Tyr Ile Ile Asn Gly Ser Asn Ser Gly Ile Val Val
435 440

<210> 59
<211> 75
<212> PRT
<213> Bacillus anthracis

<400> 59

Met Lys Val Ile Lys Asp Glu Thr Lys Leu Lys Ala Ala Phe Lys Lys
1 5 10 15

Ser Gly Tyr Lys Tyr Gln Glu Leu Ala Asp Glu Leu Glu Ile Ser Cys
20 25 30

Ser Tyr Cys Tyr Lys Leu Ile Asn Asn His Asn Tyr Lys Lys Lys Ile
35 40 45

Ser Tyr Asn Leu Ala Ser Arg Met Ala His Val Leu Asn Ala Ser Val
50 55 60

Val Asp Leu Phe Glu Glu Gln Val Asp Phe Phe
65 70 75

<210> 60
<211> 118
<212> PRT
<213> Bacillus anthracis

<400> 60

Val Ile Ile Val Glu Phe Lys Asp Arg Leu Arg Gln Leu Arg Arg Glu
1 5 10 15

Arg Asn Leu Thr Gln His Asp Leu Gly Gln Ala Ile Gly Val Thr Ala
20 25 30

Gly Ser Val Ser Lys Phe Glu Thr Gly Phe Lys Pro Ala Ser Arg Glu
35 40 45

Thr Val Glu Arg Ala Ala Asp Phe Leu Gly Val Pro Val Asp Tyr Leu
50 55 60

Leu Gly Arg Ser Asp Ser Arg Glu Leu Asp Ala Asp Met Asn Gln Lys
65 70 75 80

Tyr Leu His Ile Lys Asn Arg Leu Glu Gln Leu Pro Glu Glu His Gln
85 90 95

Glu Ile Val Leu Gln Asn Met Leu Thr Met Met Glu Ser Leu Glu Lys
100 105 110

Leu Lys Ser Thr Ser Lys
115

<210> 61
<211> 61
<212> PRT
<213> Bacillus anthracis

<400> 61

Met Arg Glu His Arg Gly Glu Arg Ala Met Ser Glu Ile Tyr Tyr Lys
1 5 10 15

Gly Phe Ile Ile Lys Glu Thr Tyr Gly Glu Arg Asn Ile Glu Glu Val
20 25 30

Phe Lys Glu Ala Tyr Glu Ser Phe Tyr Gly Val Glu Val Lys Val Val
35 40 45

Lys Lys Glu Leu Gly Thr Lys Arg Asn Ser Ala Ala Ser
50 55 60

<210> 62
<211> 75
<212> PRT
<213> Bacillus anthracis

<400> 62

Met Lys Val Ile Lys Asp Glu Thr Lys Leu Lys Ala Ala Phe Lys Lys
1 5 10 15

Ser Gly Tyr Lys Tyr Gln Glu Leu Ala Asp Glu Leu Glu Ile Ser Cys
20 25 30

Ser Tyr Cys Tyr Lys Leu Ile Asn Asn His Asn Tyr Lys Lys Lys Ile
35 40 45

Ser Tyr Asn Leu Ala Ser Arg Met Ala His Val Leu Asn Ala Ser Val
50 55 60

Val Asp Leu Phe Glu Glu Gln Val Asp Phe Phe
65 70 75

<210> 63
<211> 271
<212> PRT
<213> Bacillus anthracis

<400> 63

Met Asp Gln Leu Thr Val Ala Ser Glu Leu Arg Leu Leu Gly Arg Arg
1 5 10 15

Lys Val Ala Gly Tyr Glu Phe Thr Gly Ile Glu Gly Gly Phe Gly Glu
20 25 30

Gly Lys Lys Ala Met Leu Val Leu Asp Ile Ala Thr Ile His Asn Gln
35 40 45

Pro Leu Lys Glu Ile Asn Arg Arg Ile Asn Asp Asn Arg Ile Arg Phe
50 55 60

Lys Asp Gly Val Asp Ile Val Asp Leu Lys Ser Gly Gly Phe Asn Pro
65 70 75 80

Pro Gln Leu Leu Asn Leu Gly Phe Ser Asn Met Gln Ile Ala Lys Ser
85 90 95

Asn Asn Ile Tyr Leu Leu Ser Glu Arg Gly Tyr Ala Lys Leu Leu Lys
100 105 110

Ile Leu Glu Asp Asp Lys Ala Trp Glu Leu Tyr Asp Ile Leu Val Asp
115 120 125

Glu Tyr Phe Asn Met Arg Glu Lys Asn Gln Val Ala Thr Asp Pro Met
130 135 140

Ser Ile Leu Lys Leu Thr Phe Glu Ala Leu Glu Gly Gln Gln Gln Ala
145 150 155 160

Ile Glu Glu Ile Lys Ser Asp Val Gln Asp Leu Arg Glu Asn Thr Pro
165 170 175

Leu Phe Ala Ile Glu Cys Asp Glu Ile Ser Thr Ala Val Lys Arg Gln
180 185 190

Gly Val Ile Leu Leu Gly Gly Lys Gln Ser Asn Ala Tyr Arg Asn Arg
195 200 205

Gly Leu Arg Gly Lys Val Tyr Arg Asp Ile Tyr Asn Gln Leu Tyr Arg
210 215 220

Glu Phe Gly Val Lys Ser His Lys Ala Ile Lys Arg Cys His Leu Asn
225 230 235 240

Val Ala Val Lys Ile Val Glu Glu Tyr Thr Leu Pro Ile Val Leu Ser
245 250 255

Glu Glu Ile Ser Phe Val Asn Ala Gln Met Asp Phe Thr Glu Met
260 265 270

<210> 64
<211> 61
<212> PRT
<213> Bacillus anthracis

<400> 64

Met Arg Glu His Arg Gly Glu Arg Ala Met Ser Glu Ile Tyr Tyr Lys
1 5 10 15

Gly Phe Ile Ile Lys Glu Thr Tyr Gly Glu Arg Asn Ile Glu Glu Val
20 25 30

Phe Lys Glu Ala Tyr Glu Ser Phe Tyr Gly Val Glu Val Lys Val Val
35 40 45

Lys Lys Glu Leu Gly Thr Lys Arg Asn Ser Ala Ala Ser
50 55 60

<210> 65
<211> 217
<212> PRT
<213> Bacillus anthracis

<400> 65

Met Asp Gln Leu Arg Val Ile Glu Gly Glu Lys Val Asp Lys Pro Asp
1 5 10 15

Tyr Val Glu Ile Tyr Leu Gly Ala Phe Met Asn Ala Val Asn Glu Leu
20 25 30

Lys Lys Gln Asp Glu Glu Thr Arg Ser Leu Ser Lys Asp Thr Tyr Lys
35 40 45

Lys Ala Ile Phe Tyr Gly Val Arg Tyr Ile Ser Ile Ser Lys Asn Asp
50 55 60

Ser Leu Asn Tyr Asp Tyr Leu Met Asn Arg Phe Leu Leu Ile Ser Tyr
65 70 75 80

Leu Glu Asn Leu Met Lys Val Leu Thr Pro Arg Asp Phe Met Thr Ile
85 90 95

Phe Pro Ile Asp Lys Asn Tyr Asp Gly Ala Arg Tyr Glu Met Lys Asp
100 105 110

Tyr Phe Phe Thr Met Asn Glu Ile Lys Lys Ile Gly Met Asp Thr Pro
115 120 125

Ile Gly Glu Lys Ile Met Glu Phe Leu Trp Asp Tyr Gln Asn Phe Lys
130 135 140

Asp Ile Thr Leu Phe Asn Leu Ala Ser Val Ser Ile Leu Asn Lys Leu
145 150 155 160

Gln Lys Met Gln Gly Lys Lys Thr Leu Thr Glu Glu Phe Ala Glu Arg
165 170 175

Leu Gly Ile Asp Thr Tyr Thr Lys His Lys Glu Lys Gly Gly Lys Glu
180 185 190

Tyr Ile Thr Asn Asp Arg Thr Gly Glu Ile Gln Glu Val Lys Lys Ser
195 200 205

Arg Pro Arg Tyr Leu Lys Pro Val Gln
210 215

<210> 66
<211> 271
<212> PRT
<213> Bacillus anthracis

<400> 66

Met Asp Gln Leu Thr Val Ala Ser Glu Leu Arg Leu Leu Gly Arg Arg
1 5 10 15

Lys Val Ala Gly Tyr Glu Phe Thr Gly Ile Glu Gly Gly Phe Gly Glu
20 25 30

Gly Lys Lys Ala Met Leu Val Leu Asp Ile Ala Thr Ile His Asn Gln
35 40 45

Pro Leu Lys Glu Ile Asn Arg Arg Ile Asn Asp Asn Arg Ile Arg Phe
50 55 60

Lys Asp Gly Val Asp Ile Val Asp Leu Lys Ser Gly Gly Phe Asn Pro
65 70 75 80

Pro Gln Leu Leu Asn Leu Gly Phe Ser Asn Met Gln Ile Ala Lys Ser
85 90 95

```
Asn Asn Ile Tyr Leu Leu Ser Glu Arg Gly Tyr Ala Lys Leu Leu Lys
            100                 105                 110

Ile Leu Glu Asp Asp Lys Ala Trp Glu Leu Tyr Asp Ile Leu Val Asp
        115                 120                 125

Glu Tyr Phe Asn Met Arg Glu Lys Asn Gln Val Ala Thr Asp Pro Met
    130                 135                 140

Ser Ile Leu Lys Leu Thr Phe Glu Ala Leu Glu Gly Gln Gln Gln Ala
145                 150                 155                 160

Ile Glu Glu Ile Lys Ser Asp Val Gln Asp Leu Arg Glu Asn Thr Pro
                165                 170                 175

Leu Phe Ala Ile Glu Cys Asp Glu Ile Ser Thr Ala Val Lys Arg Gln
            180                 185                 190

Gly Val Ile Leu Leu Gly Gly Lys Gln Ser Asn Ala Tyr Arg Asn Arg
        195                 200                 205

Gly Leu Arg Gly Lys Val Tyr Arg Asp Ile Tyr Asn Gln Leu Tyr Arg
    210                 215                 220

Glu Phe Gly Val Lys Ser His Lys Ala Ile Lys Arg Cys His Leu Asn
225                 230                 235                 240

Val Ala Val Lys Ile Val Glu Glu Tyr Thr Leu Pro Ile Val Leu Ser
                245                 250                 255

Glu Glu Ile Ser Phe Val Asn Ala Gln Met Asp Phe Thr Glu Met
            260                 265                 270
```

<210> 67
<211> 315
<212> PRT
<213> Bacillus anthracis

<400> 67

```
Met Ala Leu Phe Arg Lys Val His Thr Glu Phe Trp Thr Asp Val Lys
1               5                   10                  15

Val Ser Glu Asp Met Thr Pro Glu Asp Lys Leu Phe Met Val Tyr Leu
            20                  25                  30

Leu Thr Asn Pro His Thr Thr Gln Leu Gly Val Tyr Glu Ile Thr Pro
        35                  40                  45

Lys Met Ile Ala Phe Glu Ile Gly Leu Ser Ile Glu Ser Ala Arg Ala
    50                  55                  60
```

```
Leu Leu Glu Arg Phe Glu Asn His His Lys Leu Ile Lys Tyr Asn Lys
65                  70                  75                  80

Leu Thr Arg Glu Ile Ala Ile Lys Asn Trp Gly Lys Tyr Asn Leu Asn
                85                  90                  95

Arg Gly Gly Lys Pro Ile Glu Asp Cys Leu Lys Arg Glu Ile Asp Lys
            100                 105                 110

Val Lys Asp Leu Ser Leu Ile Lys Phe Ile Leu Glu His Thr Asp His
        115                 120                 125

Ala Ala Leu Lys Arg Lys Ile Asn Leu Tyr Ala Gly Phe Asp Asp Thr
    130                 135                 140

Ser His Asp Thr Leu Ala Ile Arg Asp Gln Glu Glu Glu Lys Glu Gln
145                 150                 155                 160

Lys Lys Glu Gln Lys Glu Glu Gln Glu Glu Lys Glu Lys Glu Lys Glu
                165                 170                 175

Lys Gln Lys Glu Glu Glu Lys Glu Pro Glu Glu Glu Lys Thr Arg Ile
            180                 185                 190

Lys Ser Lys Ala Ser Leu Lys Ser Asp Ala Lys Ser Asn Pro Ile Pro
        195                 200                 205

Tyr Lys Asp Ile Leu Asp Tyr Leu Asn Glu Lys Ala Asn Lys Asn Phe
    210                 215                 220

Asn Pro Lys Ala Glu Gly His Arg Lys Leu Ile Arg Ala Arg Trp Asn
225                 230                 235                 240

Glu Gly Tyr Lys Leu Glu Asp Phe Lys Lys Val Ile Asp Asn Lys Thr
                245                 250                 255

Thr Gln Trp Phe Gly Lys Lys Ser Phe Asp Gly Lys Pro Leu Asp Gln
            260                 265                 270

Phe Leu Arg Pro Ser Thr Leu Phe Ala Gln Lys His Phe Asp Asn Tyr
        275                 280                 285

Leu Asn Glu Thr Val Asn Ile Ser Asn Gln Gln His Gly Asp Gln Ile
    290                 295                 300

Val Ile Pro Gly Phe Arg Gly Glu Met Pro Phe
305                 310                 315
```

<210> 68
<211> 217
<212> PRT

<213> Bacillus anthracis

<400> 68

```
Met Asp Gln Leu Arg Val Ile Glu Gly Glu Lys Val Asp Lys Pro Asp
1               5                  10                  15

Tyr Val Glu Ile Tyr Leu Gly Ala Phe Met Asn Ala Val Asn Glu Leu
            20                  25                  30

Lys Lys Gln Asp Glu Glu Thr Arg Ser Leu Ser Lys Asp Thr Tyr Lys
        35                  40                  45

Lys Ala Ile Phe Tyr Gly Val Arg Tyr Ile Ser Ile Ser Lys Asn Asp
    50                  55                  60

Ser Leu Asn Tyr Asp Tyr Leu Met Asn Arg Phe Leu Leu Ile Ser Tyr
65                  70                  75                  80

Leu Glu Asn Leu Met Lys Val Leu Thr Pro Arg Asp Phe Met Thr Ile
                85                  90                  95

Phe Pro Ile Asp Lys Asn Tyr Asp Gly Ala Arg Tyr Glu Met Lys Asp
            100                 105                 110

Tyr Phe Phe Thr Met Asn Glu Ile Lys Lys Ile Gly Met Asp Thr Pro
        115                 120                 125

Ile Gly Glu Lys Ile Met Glu Phe Leu Trp Asp Tyr Gln Asn Phe Lys
    130                 135                 140

Asp Ile Thr Leu Phe Asn Leu Ala Ser Val Ser Ile Leu Asn Lys Leu
145                 150                 155                 160

Gln Lys Met Gln Gly Lys Lys Thr Leu Thr Glu Glu Phe Ala Glu Arg
                165                 170                 175

Leu Gly Ile Asp Thr Tyr Thr Lys His Lys Glu Lys Gly Gly Lys Glu
            180                 185                 190

Tyr Ile Thr Asn Asp Arg Thr Gly Glu Ile Gln Glu Val Lys Lys Ser
        195                 200                 205

Arg Pro Arg Tyr Leu Lys Pro Val Gln
    210                 215
```

<210> 69
<211> 303
<212> PRT
<213> Bacillus anthracis

<400> 69

Val Lys Lys Ile Gln Asp Ser Phe Glu Lys Leu Thr Lys Leu Lys Phe
1 5 10 15

Ala Asp Glu Gln Cys Asp Lys His Thr Phe Asn Lys His Gly Lys Glu
20 25 30

Val Ile Lys Leu Val Arg Lys Met Ile Asp Asp Ala Gly Thr Val Tyr
35 40 45

Cys Pro Arg Cys Met Val Glu Glu Gln Asn Ser Val Leu Phe Gln Gln
50 55 60

Ala Asn Asn His Tyr Lys Lys Ile Asn Arg Glu Arg Lys Lys Asn Val
65 70 75 80

Leu Phe Gln His Ser Ile Ile Glu Asn Gln Ser Ile Thr Glu Ser Arg
85 90 95

Leu Ser Thr Tyr Lys Thr Asp Cys Gln Glu Thr Lys Glu Asn Lys Glu
100 105 110

Lys Ala Ile Lys Ile Leu Glu Arg Ile Lys Asn Gly Glu Phe Leu Asn
115 120 125

Val Tyr Ile Ala Gly Ile Gln Gly Val Gly Lys Ser His Leu Ala Tyr
130 135 140

Ala Met Leu Tyr Glu Leu Val Lys His Tyr Trp Val Ile Ser Asp Gly
145 150 155 160

Glu Lys Leu Asn Asp Glu His Ala Phe Lys Asn Met Lys Ser Cys Leu
165 170 175

Phe Val Glu Ile Glu Lys Leu Ile Arg Leu Ile Gln His Ser Phe Arg
180 185 190

Asn Ile Glu Ser Lys Tyr Thr Met Asp Tyr Cys Ile Ser Leu Met Val
195 200 205

Asp Val Asp Phe Leu Val Ile Asp Asp Leu Gly Ala Glu Ser Gly Ser
210 215 220

Met Asn Arg Asn Gly Glu Ala Ser Asp Phe Val His Lys Ile Leu Tyr
225 230 235 240

Gly Val Thr Asn Gly Arg Gln Gly Ala Asn Lys Thr Thr Ile Thr Thr
245 250 255

Ser Asn Leu Ser Ser Ala Gln Leu Phe Gln Lys Tyr Asp Pro Lys Leu
260 265 270

Ala Ser Arg Leu Leu Asn Gly Val Ser Lys Asp Glu Thr Ile Val Phe
275 280 285

Lys Thr Thr Thr Asp Lys Arg Ile Val Asn Leu Asp Ile Gly Phe
290 295 300

<210> 70
<211> 315
<212> PRT
<213> Bacillus anthracis

<400> 70

Met Ala Leu Phe Arg Lys Val His Thr Glu Phe Trp Thr Asp Val Lys
1 5 10 15

Val Ser Glu Asp Met Thr Pro Glu Asp Lys Leu Phe Met Val Tyr Leu
20 25 30

Leu Thr Asn Pro His Thr Thr Gln Leu Gly Val Tyr Glu Ile Thr Pro
35 40 45

Lys Met Ile Ala Phe Glu Ile Gly Leu Ser Ile Glu Ser Ala Arg Ala
50 55 60

Leu Leu Glu Arg Phe Glu Asn His His Lys Leu Ile Lys Tyr Asn Lys
65 70 75 80

Leu Thr Arg Glu Ile Ala Ile Lys Asn Trp Gly Lys Tyr Asn Leu Asn
85 90 95

Arg Gly Gly Lys Pro Ile Glu Asp Cys Leu Lys Arg Glu Ile Asp Lys
100 105 110

Val Lys Asp Leu Ser Leu Ile Lys Phe Ile Leu Glu His Thr Asp His
115 120 125

Ala Ala Leu Lys Arg Lys Ile Asn Leu Tyr Ala Gly Phe Asp Asp Thr
130 135 140

Ser His Asp Thr Leu Ala Ile Arg Asp Gln Glu Glu Glu Lys Glu Gln
145 150 155 160

Lys Lys Glu Gln Lys Glu Glu Gln Glu Glu Lys Glu Lys Glu Lys Glu
165 170 175

Lys Gln Lys Glu Glu Glu Lys Glu Pro Glu Glu Glu Lys Thr Arg Ile
180 185 190

Lys Ser Lys Ala Ser Leu Lys Ser Asp Ala Lys Ser Asn Pro Ile Pro
195 200 205

Tyr Lys Asp Ile Leu Asp Tyr Leu Asn Glu Lys Ala Asn Lys Asn Phe
210 215 220

Asn Pro Lys Ala Glu Gly His Arg Lys Leu Ile Arg Ala Arg Trp Asn
225 230 235 240

Glu Gly Tyr Lys Leu Glu Asp Phe Lys Lys Val Ile Asp Asn Lys Thr
245 250 255

Thr Gln Trp Phe Gly Lys Lys Ser Phe Asp Gly Lys Pro Leu Asp Gln
260 265 270

Phe Leu Arg Pro Ser Thr Leu Phe Ala Gln Lys His Phe Asp Asn Tyr
275 280 285

Leu Asn Glu Thr Val Asn Ile Ser Asn Gln Gln His Gly Asp Gln Ile
290 295 300

Val Ile Pro Gly Phe Arg Gly Glu Met Pro Phe
305 310 315

<210> 71
<211> 77
<212> PRT
<213> Bacillus anthracis

<400> 71

Met Lys Glu Val Lys Gly Lys Asn Thr Lys Leu Met Glu Glu Phe Asp
1 5 10 15

Val Leu Leu Arg Gln Leu Leu Ile Lys Ser Lys Thr Asp Glu Arg Val
20 25 30

Lys Asn Phe Leu Asp Asp Leu Phe Glu Met Leu Ser Asp Asn Lys Leu
35 40 45

Gln Ser Asp Ile Asp Phe Lys Thr Ala Leu Asn Lys Leu Arg Glu Lys
50 55 60

His Phe Pro Lys Phe Asp Lys Gly Glu Ser Lys Asn Asp
65 70 75

<210> 72
<211> 303
<212> PRT
<213> Bacillus anthracis

<400> 72

Val Lys Lys Ile Gln Asp Ser Phe Glu Lys Leu Thr Lys Leu Lys Phe
1 5 10 15

```
Ala Asp Glu Gln Cys Asp Lys His Thr Phe Asn Lys His Gly Lys Glu
            20                  25                  30

Val Ile Lys Leu Val Arg Lys Met Ile Asp Asp Ala Gly Thr Val Tyr
        35                  40                  45

Cys Pro Arg Cys Met Val Glu Glu Gln Asn Ser Val Leu Phe Gln Gln
    50                  55                  60

Ala Asn Asn His Tyr Lys Lys Ile Asn Arg Glu Arg Lys Lys Asn Val
65                  70                  75                  80

Leu Phe Gln His Ser Ile Ile Glu Asn Gln Ser Ile Thr Glu Ser Arg
                85                  90                  95

Leu Ser Thr Tyr Lys Thr Asp Cys Gln Glu Thr Lys Glu Asn Lys Glu
            100                 105                 110

Lys Ala Ile Lys Ile Leu Glu Arg Ile Lys Asn Gly Glu Phe Leu Asn
        115                 120                 125

Val Tyr Ile Ala Gly Ile Gln Gly Val Gly Lys Ser His Leu Ala Tyr
    130                 135                 140

Ala Met Leu Tyr Glu Leu Val Lys His Tyr Trp Val Ile Ser Asp Gly
145                 150                 155                 160

Glu Lys Leu Asn Asp Glu His Ala Phe Lys Asn Met Lys Ser Cys Leu
                165                 170                 175

Phe Val Glu Ile Glu Lys Leu Ile Arg Leu Ile Gln His Ser Phe Arg
            180                 185                 190

Asn Ile Glu Ser Lys Tyr Thr Met Asp Tyr Cys Ile Ser Leu Met Val
        195                 200                 205

Asp Val Asp Phe Leu Val Ile Asp Asp Leu Gly Ala Glu Ser Gly Ser
    210                 215                 220

Met Asn Arg Asn Gly Glu Ala Ser Asp Phe Val His Lys Ile Leu Tyr
225                 230                 235                 240

Gly Val Thr Asn Gly Arg Gln Gly Ala Asn Lys Thr Thr Ile Thr Thr
                245                 250                 255

Ser Asn Leu Ser Ser Ala Gln Leu Phe Gln Lys Tyr Asp Pro Lys Leu
            260                 265                 270

Ala Ser Arg Leu Leu Asn Gly Val Ser Lys Asp Glu Thr Ile Val Phe
        275                 280                 285
```

Lys Thr Thr Thr Asp Lys Arg Ile Val Asn Leu Asp Ile Gly Phe
290 295 300

<210> 73
<211> 248
<212> PRT
<213> Bacillus anthracis

<400> 73

Met Thr Lys Glu Lys Gly Gln Ala Lys Glu Val Val Asn Val Arg Gly
1 5 10 15

Met Ser Asp Asp Glu Phe Ile Glu Lys Tyr Gly Arg Leu Val His His
20 25 30

Cys Val Trp Lys Arg Tyr Ala Lys Lys Lys Ala Ser Ile Glu Arg Asp
35 40 45

Thr Gly Leu Asp Ile Glu Asp Leu Thr Gln Phe Gly Met Ile Gly Leu
50 55 60

Ile Lys Ala Arg Asp Asn Phe Asp Leu Glu Phe Gly Cys Ala Phe Ser
65 70 75 80

Thr Tyr Ala Val Pro Lys Ile Ile Gly Glu Ile Gly Arg Ala Ile Arg
85 90 95

Asp Asn Gln Lys Ile Lys Val Gln Arg Thr Val Tyr Gly Val Lys Gly
100 105 110

Lys Ile Leu Asn Gln Gln Leu Ala Asp Lys Glu Pro Glu Glu Ile Ala
115 120 125

Asp Ile Leu Asp Glu Ser Val Ser Leu Val Lys Thr Ala Leu Glu Tyr
130 135 140

Gln Pro Ser Thr Asp Ser Leu Asn Lys Val Val Tyr Ala Ser Gly Ala
145 150 155 160

Asn Glu Glu Leu Thr Leu Glu Arg Met Ile Glu Asp Thr Lys Thr Glu
165 170 175

Asp Ile Glu Glu Thr Thr Ile Asn Arg Ala Val Ile Arg Glu Phe Lys
180 185 190

Ala Ala Leu Pro Pro Lys Glu Tyr Ile Val Leu Asp Met Arg Leu Gln
195 200 205

Asn Met Thr Gln Gln Asn Ile Ala Asn Gln Met Gly Tyr Ser Gln Val
210 215 220

Gln Ile Ser Arg Ile Leu Ala Lys Ile Asn Gln Arg Ala Ala Gln Phe
225 230 235 240

Gly Lys Glu Gly Gly Leu Gln Asp
245

<210> 74
<211> 77
<212> PRT
<213> Bacillus anthracis

<400> 74

Met Lys Glu Val Lys Gly Lys Asn Thr Lys Leu Met Glu Glu Phe Asp
1 5 10 15

Val Leu Leu Arg Gln Leu Leu Ile Lys Ser Lys Thr Asp Glu Arg Val
20 25 30

Lys Asn Phe Leu Asp Asp Leu Phe Glu Met Leu Ser Asp Asn Lys Leu
35 40 45

Gln Ser Asp Ile Asp Phe Lys Thr Ala Leu Asn Lys Leu Arg Glu Lys
50 55 60

His Phe Pro Lys Phe Asp Lys Gly Glu Ser Lys Asn Asp
65 70 75

<210> 75
<211> 158
<212> PRT
<213> Bacillus anthracis

<400> 75

Leu Ser Val Thr Lys Gly Val Cys Ile Asp Val Asp His Ser Asp Leu
1 5 10 15

Leu His Glu Lys Val Glu Tyr Phe Leu Phe Pro Ala Lys Pro Ser His
20 25 30

Tyr Tyr Val Ser Arg Phe Asn Arg Lys Gly Ala His Phe Gly Cys Tyr
35 40 45

Gln Ala Glu Arg Phe Gln Ile Thr Glu Lys Glu Val Trp Thr Pro Glu
50 55 60

Pro Gln Pro Asn Leu Pro Glu Leu Asn Thr Ser Leu Phe Tyr Arg Ala
65 70 75 80

Gln Leu Ile Trp Arg Lys Lys Gly Tyr Lys Asp Lys Pro Leu Lys Asp
85 90 95

Tyr Ile Val Gln Pro Arg Gly Lys His Cys Tyr Phe Trp His Asp Arg
100 105 110

Glu Arg Lys Lys Phe Cys Gly Cys Phe Pro Leu His Trp Phe Thr Asp
115 120 125

Phe Val Pro Val Gln Ser His His Ile Glu Glu Lys Thr Arg Glu Glu
130 135 140

Val Lys Leu Leu Gln Arg Pro Asp Gly Gln Leu Ala Phe Phe
145 150 155

<210> 76
<211> 248
<212> PRT
<213> Bacillus anthracis

<400> 76

Met Thr Lys Glu Lys Gly Gln Ala Lys Glu Val Val Asn Val Arg Gly
1 5 10 15

Met Ser Asp Asp Glu Phe Ile Glu Lys Tyr Gly Arg Leu Val His His
20 25 30

Cys Val Trp Lys Arg Tyr Ala Lys Lys Lys Ala Ser Ile Glu Arg Asp
35 40 45

Thr Gly Leu Asp Ile Glu Asp Leu Thr Gln Phe Gly Met Ile Gly Leu
50 55 60

Ile Lys Ala Arg Asp Asn Phe Asp Leu Glu Phe Gly Cys Ala Phe Ser
65 70 75 80

Thr Tyr Ala Val Pro Lys Ile Ile Gly Glu Ile Gly Arg Ala Ile Arg
85 90 95

Asp Asn Gln Lys Ile Lys Val Gln Arg Thr Val Tyr Gly Val Lys Gly
100 105 110

Lys Ile Leu Asn Gln Gln Leu Ala Asp Lys Glu Pro Glu Glu Ile Ala
115 120 125

Asp Ile Leu Asp Glu Ser Val Ser Leu Val Lys Thr Ala Leu Glu Tyr
130 135 140

Gln Pro Ser Thr Asp Ser Leu Asn Lys Val Val Tyr Ala Ser Gly Ala
145 150 155 160

Asn Glu Glu Leu Thr Leu Glu Arg Met Ile Glu Asp Thr Lys Thr Glu
165 170 175

```
Asp Ile Glu Glu Thr Thr Ile Asn Arg Ala Val Ile Arg Glu Phe Lys
            180                 185                 190

Ala Ala Leu Pro Pro Lys Glu Tyr Ile Val Leu Asp Met Arg Leu Gln
        195                 200                 205

Asn Met Thr Gln Gln Asn Ile Ala Asn Gln Met Gly Tyr Ser Gln Val
    210                 215                 220

Gln Ile Ser Arg Ile Leu Ala Lys Ile Asn Gln Arg Ala Ala Gln Phe
225                 230                 235                 240

Gly Lys Glu Gly Gly Leu Gln Asp
                245
```

<210> 77
<211> 180
<212> PRT
<213> Bacillus anthracis

<400> 77

```
Met Asp Ile Lys Lys Leu Phe Ala Met Gln Asn Ile Leu Asp Lys Arg
1               5                   10                  15

Val Leu Glu Ser Lys Asn Leu Ser Arg Gly Glu Val Phe Glu Phe Arg
            20                  25                  30

Ile Leu Ala Phe Leu Asp Glu Leu Gly Glu Cys Met Lys Glu Trp Arg
        35                  40                  45

Val Phe Lys Phe Trp Ser Asp Asp Arg Lys Pro Arg Thr Ser Ile Pro
    50                  55                  60

Thr Gly Glu Ile Ile Val Leu Asp Asp Gly Tyr Glu Val Glu Val Tyr
65                  70                  75                  80

Lys Asn Pro Leu Leu Glu Glu Tyr Val Asp Gly Leu His Phe Ala Ile
                85                  90                  95

Gly Leu Cys Ile Asp Leu Lys Thr Glu Ile Asn Phe Pro Ala Ser Met
            100                 105                 110

Arg Cys Glu Thr Val Thr Glu Gln Phe Phe Glu Leu Tyr His Leu Ala
        115                 120                 125

Ile Arg Leu Lys Glu Glu Pro Thr Ala Phe Arg Ala Asp Val Leu Leu
    130                 135                 140

Ser His Tyr Leu Gly Leu Gly Glu Leu Leu Cys Phe Ser Leu Glu Glu
145                 150                 155                 160
```

Ile Gly His Glu Tyr Ile Glu Lys Asn Lys Ile Asn His Glu Arg Gln
165 170 175

Ser Asn Gly Tyr
180

<210> 78
<211> 158
<212> PRT
<213> Bacillus anthracis

<400> 78

Leu Ser Val Thr Lys Gly Val Cys Ile Asp Val Asp His Ser Asp Leu
1 5 10 15

Leu His Glu Lys Val Glu Tyr Phe Leu Phe Pro Ala Lys Pro Ser His
20 25 30

Tyr Tyr Val Ser Arg Phe Asn Arg Lys Gly Ala His Phe Gly Cys Tyr
35 40 45

Gln Ala Glu Arg Phe Gln Ile Thr Glu Lys Glu Val Trp Thr Pro Glu
50 55 60

Pro Gln Pro Asn Leu Pro Glu Leu Asn Thr Ser Leu Phe Tyr Arg Ala
65 70 75 80

Gln Leu Ile Trp Arg Lys Lys Gly Tyr Lys Asp Lys Pro Leu Lys Asp
85 90 95

Tyr Ile Val Gln Pro Arg Gly Lys His Cys Tyr Phe Trp His Asp Arg
100 105 110

Glu Arg Lys Lys Phe Cys Gly Cys Phe Pro Leu His Trp Phe Thr Asp
115 120 125

Phe Val Pro Val Gln Ser His His Ile Glu Glu Lys Thr Arg Glu Glu
130 135 140

Val Lys Leu Leu Gln Arg Pro Asp Gly Gln Leu Ala Phe Phe
145 150 155

<210> 79
<211> 76
<212> PRT
<213> Bacillus anthracis

<400> 79

Met Arg Val Ile Glu Ile Ser Trp Trp Ala Ile Ala Ile Gly Leu Tyr
1 5 10 15

Leu Leu Ile Gly Val Ala Leu Leu Ile Trp Ile Ile Ala Thr Asp Ser

20 25 30

Trp Gly Ser Leu Phe Leu Tyr Pro Val Phe Ala Val Val Ile Val Leu
35 40 45

Gly Trp Leu Pro Leu Met Ile Arg Ser Ile Val Gln Glu Ile Ser Lys
50 55 60

Ala Ile His Lys Trp Lys Arg Lys Gln Lys Thr Glu
65 70 75

<210> 80
<211> 180
<212> PRT
<213> Bacillus anthracis

<400> 80

Met Asp Ile Lys Lys Leu Phe Ala Met Gln Asn Ile Leu Asp Lys Arg
1 5 10 15

Val Leu Glu Ser Lys Asn Leu Ser Arg Gly Glu Val Phe Glu Phe Arg
20 25 30

Ile Leu Ala Phe Leu Asp Glu Leu Gly Glu Cys Met Lys Glu Trp Arg
35 40 45

Val Phe Lys Phe Trp Ser Asp Asp Arg Lys Pro Arg Thr Ser Ile Pro
50 55 60

Thr Gly Glu Ile Ile Val Leu Asp Asp Gly Tyr Glu Val Glu Val Tyr
65 70 75 80

Lys Asn Pro Leu Leu Glu Glu Tyr Val Asp Gly Leu His Phe Ala Ile
85 90 95

Gly Leu Cys Ile Asp Leu Lys Thr Glu Ile Asn Phe Pro Ala Ser Met
100 105 110

Arg Cys Glu Thr Val Thr Glu Gln Phe Phe Glu Leu Tyr His Leu Ala
115 120 125

Ile Arg Leu Lys Glu Glu Pro Thr Ala Phe Arg Ala Asp Val Leu Leu
130 135 140

Ser His Tyr Leu Gly Leu Gly Glu Leu Leu Cys Phe Ser Leu Glu Glu
145 150 155 160

Ile Gly His Glu Tyr Ile Glu Lys Asn Lys Ile Asn His Glu Arg Gln
165 170 175

Ser Asn Gly Tyr

<210> 81
<211> 156
<212> PRT
<213> Bacillus anthracis

<400> 81

Met Ser Gly Cys Thr Ile Val Asn Val Lys Ile Asn Lys Gln Lys Arg
1 5 10 15

Gly Met Lys Asp Met Lys Trp Met Tyr Asn Leu Asp Ser Asn Asn Glu
20 25 30

Ile Trp Thr Ser Asp Lys Phe Glu Met Lys Glu Glu Ala Ile Gln Ala
35 40 45

Ala Leu Lys Asp Trp Thr Asp Lys Met Val Ala Asp Arg Ala Ala Val
50 55 60

Asp Asn Glu Phe Gln Ile Gly Gln Phe Lys Gln Tyr Ser Pro Trp Ile
65 70 75 80

Asn Ala Asp Val Leu Leu Asp Glu Leu Tyr Glu Arg Ala Thr Asp Glu
85 90 95

Cys Gly Glu Val Ala Glu Tyr Trp Leu Ser Gly Val Pro Met Asp Glu
100 105 110

Gly Glu Lys Leu Gln Glu Gln Ile Asn Lys Val Val Thr Glu Trp Leu
115 120 125

Lys Gly Ile Asn Glu His Pro Ser Phe Gly Ser Ile Glu Asn Ile Glu
130 135 140

Thr Ile Asp Ala Ser Lys Ile Glu Tyr Lys Glu Asn
145 150 155

<210> 82
<211> 310
<212> PRT
<213> Bacillus anthracis

<400> 82

Met Asp Cys Phe Lys Lys Gly Lys Phe Ile Pro Phe Pro Cys Ala Leu
1 5 10 15

Pro Ile Pro Glu Ala Gly Pro Thr Gly Pro Thr Gly Pro Pro Gly Ser
20 25 30

Ala Gly Gly Ser Thr Gly Pro Thr Gly Pro Thr Gly Pro Gln Gly Leu
35 40 45

```
Gln Gly Ile Gln Gly Val Gln Gly Asn Pro Gly Thr Thr Gly Pro Gln
    50                  55                  60

Gly Ile Gln Gly Ile Gln Gly Ile Pro Gly Val Ser Gly Pro Ile Gly
65                  70                  75                  80

Pro Ile Gly Pro Thr Gly Ile Gln Gly Val Gln Gly Ile Gln Gly Phe
                85                  90                  95

Pro Gly Ile Pro Gly Pro Met Gly Pro Ile Gly Leu Thr Gly Pro Thr
            100                 105                 110

Gly Ile Gln Gly Ile Gln Gly Ile Gln Gly Val Gln Gly Ile Gln Gly
        115                 120                 125

Ile Gln Gly Asp Val Gly Pro Thr Gly Pro Gln Gly Ile Pro Gly Ile
    130                 135                 140

Pro Gly Leu Thr Gly Pro Thr Gly Ser Gln Gly Val Thr Gly Val Thr
145                 150                 155                 160

Gly Pro Ser Gly Gly Pro Pro Gly Pro Thr Gly Ala Thr Gly Pro Thr
                165                 170                 175

Gly Pro Ala Gly Gly Pro Pro Gly Pro Thr Gly Pro Thr Gly Pro Ala
            180                 185                 190

Gly Gly Pro Thr Gly Leu Thr Gly Pro Thr Gly Pro Thr Gly Pro Thr
        195                 200                 205

Gly Ile Gln Gly Ile Gln Gly Val Gln Gly Thr Gln Gly Ile Pro Gly
    210                 215                 220

Pro Thr Gly Pro Gln Gly Ile Gln Gly Val Gln Gly Leu Gln Gly Ile
225                 230                 235                 240

Pro Gly Ile Pro Gly Ser Met Gly Pro Thr Gly Leu Thr Gly Pro Thr
                245                 250                 255

Gly Leu Gln Gly Ile Gln Gly Ile Gln Gly Asn Pro Gly Pro Thr Gly
            260                 265                 270

Pro Phe Gly Pro Thr Gly Pro Thr Gly Leu Gln Gly Ile Gln Gly Leu
        275                 280                 285

Gln Gly Ile Gln Gly Ile Pro Gly Ser Asn Arg Thr Ser Arg Asn Pro
    290                 295                 300

Arg Ser Asn Arg Thr Cys
```

305 310

<210> 83
<211> 129
<212> PRT
<213> Bacillus anthracis

<400> 83

Met Tyr Gln Thr Trp Lys Asn Leu Leu Asn Ser Ile Lys Lys Ile Leu
1 5 10 15

Gln Ala Lys Leu Leu Val Lys Gly Arg Lys Leu Ala Tyr Phe Asp Leu
20 25 30

Asn Gly Leu Trp Ile Ala Leu Asn Val Glu Glu Asp Ile Pro Arg Asn
35 40 45

Glu Ile Lys Gln Ser Tyr Thr His Met Ala Phe Thr Val Thr Asn Glu
50 55 60

Ala Leu Asp His Leu Lys Glu Val Leu Ile Gln Asn Asp Val Asn Ile
65 70 75 80

Leu Pro Gly Arg Glu Arg Asp Glu Arg Asp Gln Arg Ser Leu Tyr Phe
85 90 95

Thr Asp Pro Asp Gly His Lys Phe Glu Phe His Thr Gly Thr Leu Gln
100 105 110

Asn Arg Leu Glu Tyr Tyr Lys Glu Asp Lys Lys His Met Thr Phe Tyr
115 120 125

Ile

<210> 84
<211> 163
<212> PRT
<213> Bacillus anthracis

<400> 84

Leu Leu Ala His Phe Pro Gln Lys Leu Phe Phe Phe Gly Gly Thr Asn
1 5 10 15

Ser Gly Phe Gln Arg Ile Ala Gly Ser Pro Gly Ala Asp Ser Gln Asp
20 25 30

Ile Pro Tyr Val Leu Gly Gly Ala Gly Ser Val Val Gly Leu Ser Ala
35 40 45

Ser Ile Ser Ile Asn Asn Leu Pro Ile Gly Val Tyr Thr Ile Arg Val
50 55 60

```
Cys Lys Asn Val Pro Ile Asn Leu Ala Ala Pro Gly Pro Gly Gln Val
65                  70                  75                  80

Ile Ser Thr Ile Ile Leu Thr Thr Thr Ala Val Ile Ser Gly Thr Ile
                85                  90                  95

Ile Leu Thr Ile Asn Pro Ser Asp Ile Gly Ala Gln Pro Val Arg Val
            100                 105                 110

Phe Asn Pro Asn Leu Val Ile Ala Pro Ala Thr Val Ala Trp Ser Ser
        115                 120                 125

Thr Ile Pro Gly Asp Ile Val Ala Arg Gly Asp Ala Met Ser Leu Phe
    130                 135                 140

Ile Thr Pro Gly Ile Thr Gln Asn Ala Val Tyr Thr Val Phe Leu His
145                 150                 155                 160

Thr Gly Asn
```

<210> 85
<211> 56
<212> PRT
<213> Bacillus anthracis

<400> 85

```
Met Ile Val Lys Ala Thr Ile Lys Leu Glu Leu Asp Asp Ser Gln Lys
1               5                   10                  15

Asn Trp Val Ser Tyr Val Arg Glu Gln Gly Gly Glu Glu Ala Val Phe
            20                  25                  30

His Tyr Leu Glu Glu Glu Val Gln Lys Lys Ile Glu Leu Ala Asp Phe
        35                  40                  45

Val Glu Met Lys Tyr Lys Asn Lys
    50                  55
```

<210> 86
<211> 191
<212> PRT
<213> Bacillus anthracis

<400> 86

```
Met Gln His Ile Pro Arg Tyr Tyr Tyr Gln Ser Gln Ser Pro Met Asp
1               5                   10                  15

Ser Ile Trp Asn Asn Asn Asn Trp Ile Tyr Ala Trp Asn Pro Tyr Tyr
            20                  25                  30
```

```
Tyr Asn Tyr Asn Asn Asn Ala Trp Asn Arg Asn Arg Asn Pro Tyr Cys
        35                  40                  45

Glu Asn Val Arg Leu Thr Asp Tyr Gly Ala Arg Pro Phe Val Leu Asn
    50                  55                  60

Ile Asn Gln Ala Thr Lys Gln Asn Asn Thr Tyr Arg Thr Ala Ile Trp
65                  70                  75                  80

Thr Gly Lys Asn Leu Gln Val Thr Leu Met Ser Ile Asn Val Gly Asp
                85                  90                  95

Asp Ile Gly Leu Glu Val His Pro Thr Thr Asp Gln Phe Ile Arg Ile
            100                 105                 110

Glu Glu Gly Gln Gly Leu Val Gln Met Gly Asp Asn Lys Asp Lys Leu
        115                 120                 125

Asp Phe Gln Glu Met Val Tyr Asp Asp Tyr Ala Ile Met Ile Pro Ala
    130                 135                 140

Gly Lys Trp His Asn Val Ile Asn Thr Gly Asn Thr Pro Leu Lys Ile
145                 150                 155                 160

Tyr Ala Ile Tyr Ala Pro Pro Glu His Pro Tyr Gly Thr Val His Glu
                165                 170                 175

Thr Lys Ala Ile Ala Met Ser Thr Glu Ala Asn Arg Tyr Tyr Tyr
            180                 185                 190
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<210> 87
<211> 101
<212> PRT
<213> Bacillus anthracis

<400> 87

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Met Asp Met Ser Leu Val Gly Asn Leu Lys Glu Leu Gln Glu Lys Ala
1               5                   10                  15

Ile Asp Glu Lys Val Leu Glu Phe Ala Glu Glu Met Glu Ile Val Ile
            20                  25                  30

Thr Lys Ser Ala Ala Ser Gly Tyr Ser Gly His Arg Tyr Lys Ile His
        35                  40                  45

Asn Glu Asn Pro Asn Arg His Met Met Cys Ser Lys Ile Phe Ile Glu
    50                  55                  60

Lys Leu Gln Glu Leu Leu Asp Gly Val Lys Val Glu Phe Lys Glu Glu
65                  70                  75                  80
```

Glu Lys Lys Asn Ile Leu Gly Gly Ser Tyr Tyr Glu His Tyr Ile Arg
85 90 95

Phe Lys Trp Asn Asp
100

<210> 88
<211> 56
<212> PRT
<213> Bacillus anthracis

<400> 88

Met Ile Val Lys Ala Thr Ile Lys Leu Glu Leu Asp Asp Ser Gln Lys
1 5 10 15

Asn Trp Val Ser Tyr Val Arg Glu Gln Gly Gly Glu Glu Ala Val Phe
20 25 30

His Tyr Leu Glu Glu Glu Val Gln Lys Lys Ile Glu Leu Ala Asp Phe
35 40 45

Val Glu Met Lys Tyr Lys Asn Lys
50 55

<210> 89
<211> 79
<212> PRT
<213> Bacillus anthracis

<400> 89

Met Thr Asn Phe Leu Leu Lys Ile Leu Phe Trp Arg Lys Gly Val Glu
1 5 10 15

Arg Met Lys Thr Phe Asn Val Thr Phe Thr Glu Leu Lys Ile Tyr Glu
20 25 30

Ala Val Ile Glu Ala Glu Ser Ala Glu Lys Ile Ile Asp Val Ile Lys
35 40 45

His Leu Lys Arg Thr Glu Asp Asp Leu Val Asp Lys Gly Val Ile Ile
50 55 60

Asn Glu Val Ser Glu Ile Asn Val Ser Lys Glu Gln Lys Phe Glu
65 70 75

<210> 90
<211> 101
<212> PRT
<213> Bacillus anthracis

<400> 90

Met Asp Met Ser Leu Val Gly Asn Leu Lys Glu Leu Gln Glu Lys Ala

1 5 10 15

Ile Asp Glu Lys Val Leu Glu Phe Ala Glu Glu Met Glu Ile Val Ile
20 25 30

Thr Lys Ser Ala Ala Ser Gly Tyr Ser Gly His Arg Tyr Lys Ile His
35 40 45

Asn Glu Asn Pro Asn Arg His Met Met Cys Ser Lys Ile Phe Ile Glu
50 55 60

Lys Leu Gln Glu Leu Leu Asp Gly Val Lys Val Glu Phe Lys Glu Glu
65 70 75 80

Glu Lys Lys Asn Ile Leu Gly Gly Ser Tyr Tyr Glu His Tyr Ile Arg
85 90 95

Phe Lys Trp Asn Asp
100

<210> 91
<211> 135
<212> PRT
<213> Bacillus anthracis

<400> 91

Val Asn His His Leu Phe Asn Trp Leu Arg Asp Tyr Gln Lys Leu Glu
1 5 10 15

Glu Asp Ile Ala Tyr Leu Glu Tyr Asn Leu Asp Lys Thr Lys Ala Glu
20 25 30

Leu Arg Arg Trp Val Ser Gly Asp Leu Arg Glu Val Arg Leu Thr Ala
35 40 45

Glu Ser Glu Gly Ala Lys Val Glu Asn Arg Ile Glu Ala Ile Glu Tyr
50 55 60

Glu Leu Ala His Lys Met Asn Asp Met Tyr Lys Leu Lys Lys Leu Ile
65 70 75 80

Ser Lys Phe Arg Gly Leu Glu Asn Gln Ile Leu Lys Leu Lys Tyr Val
85 90 95

Asp Gly Met Thr Leu Glu Glu Ile Ala Glu Ala Val Asn Tyr Ser Ser
100 105 110

Ser His Ile Lys Lys Lys His Ala Glu Leu Val Arg Leu Ile Lys Phe
115 120 125

Val Glu Arg Glu Gly Val Ile

130 135

<210> 92
<211> 79
<212> PRT
<213> Bacillus anthracis

<400> 92

Met Thr Asn Phe Leu Leu Lys Ile Leu Phe Trp Arg Lys Gly Val Glu
1 5 10 15

Arg Met Lys Thr Phe Asn Val Thr Phe Thr Glu Leu Lys Ile Tyr Glu
20 25 30

Ala Val Ile Glu Ala Glu Ser Ala Glu Lys Ile Ile Asp Val Ile Lys
35 40 45

His Leu Lys Arg Thr Glu Asp Asp Leu Val Asp Lys Gly Val Ile Ile
50 55 60

Asn Glu Val Ser Glu Ile Asn Val Ser Lys Glu Gln Lys Phe Glu
65 70 75

<210> 93
<211> 74
<212> PRT
<213> Bacillus anthracis

<400> 93

Met Asp Val Gln Glu Leu Ser Arg Arg Leu Glu Asn Leu Glu His Lys
1 5 10 15

Val Leu Gln Val Glu Thr Lys Ala Asp Val Leu Asn Arg Thr Ala Ile
20 25 30

Gln Lys Gly Asp Lys Ile Lys Val Val Tyr Pro His Leu Gly Ile Gln
35 40 45

Gly Glu Tyr Leu Val Glu Lys Ile Asp Asn Gly Val Leu Glu Leu Val
50 55 60

Ala Glu Glu Thr Met Lys Lys Ile Gln Glu
65 70

<210> 94
<211> 135
<212> PRT
<213> Bacillus anthracis

<400> 94

Val Asn His His Leu Phe Asn Trp Leu Arg Asp Tyr Gln Lys Leu Glu
1 5 10 15

Glu Asp Ile Ala Tyr Leu Glu Tyr Asn Leu Asp Lys Thr Lys Ala Glu
20 25 30

Leu Arg Arg Trp Val Ser Gly Asp Leu Arg Glu Val Arg Leu Thr Ala
35 40 45

Glu Ser Glu Gly Ala Lys Val Glu Asn Arg Ile Glu Ala Ile Glu Tyr
50 55 60

Glu Leu Ala His Lys Met Asn Asp Met Tyr Lys Leu Lys Lys Leu Ile
65 70 75 80

Ser Lys Phe Arg Gly Leu Glu Asn Gln Ile Leu Lys Leu Lys Tyr Val
85 90 95

Asp Gly Met Thr Leu Glu Glu Ile Ala Glu Ala Val Asn Tyr Ser Ser
100 105 110

Ser His Ile Lys Lys Lys His Ala Glu Leu Val Arg Leu Ile Lys Phe
115 120 125

Val Glu Arg Glu Gly Val Ile
130 135

<210> 95
<211> 73
<212> PRT
<213> Bacillus anthracis

<400> 95

Leu Lys Lys Leu Ser Lys Gln Glu Leu Ala Ala Val Met Thr His Cys
1 5 10 15

Ile Ser Thr Leu Gly Glu Gln Ile Val Asn Glu His Ile Asn Pro Gln
20 25 30

Lys Leu Ala Gln Ala Ser Ala Leu His Asn Asp Leu Phe Asp Asn Thr
35 40 45

Thr Pro Lys Glu Arg Arg Glu Ala Thr Ile Ser Leu Leu Gly Lys Ala
50 55 60

Ile Asp Glu Phe Leu Glu Ser Lys Glu
65 70

<210> 96
<211> 74
<212> PRT
<213> Bacillus anthracis

<400> 96

Met Asp Val Gln Glu Leu Ser Arg Arg Leu Glu Asn Leu Glu His Lys
1 5 10 15

Val Leu Gln Val Glu Thr Lys Ala Asp Val Leu Asn Arg Thr Ala Ile
20 25 30

Gln Lys Gly Asp Lys Ile Lys Val Val Tyr Pro His Leu Gly Ile Gln
35 40 45

Gly Glu Tyr Leu Val Glu Lys Ile Asp Asn Gly Val Leu Glu Leu Val
50 55 60

Ala Glu Glu Thr Met Lys Lys Ile Gln Glu
65 70

<210> 97
<211> 134
<212> PRT
<213> Bacillus anthracis

<400> 97

Met Gly Lys Gly Tyr Phe Asn Lys Ala Val Cys Leu Val Cys Gly His
1 5 10 15

Gln Asp Arg Val Asn His Pro Ser Lys Lys Glu Tyr Gln Glu Val Thr
20 25 30

Val Cys Pro Glu Cys Asn Gly Ala Phe Val Asp Val Trp Lys Leu Gly
35 40 45

Lys Tyr Lys Arg Asn Thr Gln Ser Asn Glu Glu Pro Leu Leu Thr Ile
50 55 60

Thr Leu Thr Asp Ile Asp Ala Lys Pro Ile Val His Tyr Lys Gly Glu
65 70 75 80

Gln Ile Asp Arg Lys Leu Arg Val Thr Phe Asp Trp Glu Ser Gln Ser
85 90 95

Ile Asp Lys Ile Asn Arg Thr Tyr Ile His Ile Glu His Val Pro Ala
100 105 110

Asp Asn Lys Arg Leu Asn Thr Glu Thr Ile Gln His Asn His Pro Ile
115 120 125

Ala Asn Lys Glu Gln Val
130

<210> 98
<211> 73
<212> PRT
<213> Bacillus anthracis

<400> 98

Leu Lys Lys Leu Ser Lys Gln Glu Leu Ala Ala Val Met Thr His Cys
1 5 10 15

Ile Ser Thr Leu Gly Glu Gln Ile Val Asn Glu His Ile Asn Pro Gln
20 25 30

Lys Leu Ala Gln Ala Ser Ala Leu His Asn Asp Leu Phe Asp Asn Thr
35 40 45

Thr Pro Lys Glu Arg Arg Glu Ala Thr Ile Ser Leu Leu Gly Lys Ala
50 55 60

Ile Asp Glu Phe Leu Glu Ser Lys Glu
65 70

<210> 99
<211> 63
<212> PRT
<213> Bacillus anthracis

<400> 99

Met Asn Gly Phe Asn Lys Ile Val Asn Asp Met Gln Asn Glu Gln Val
1 5 10 15

Gly Asn Ala Met Leu Asp Phe Ala Leu Ala Ala Lys Met Met Phe Ala
20 25 30

Ala Phe Thr Gln Phe Lys Glu Ala Gly Phe Asn Glu Glu Gln Ser Phe
35 40 45

Glu Leu Thr Arg Glu Ile Leu Ile Asp Ser Leu Ser Lys Asn Gln
50 55 60

<210> 100
<211> 134
<212> PRT
<213> Bacillus anthracis

<400> 100

Met Gly Lys Gly Tyr Phe Asn Lys Ala Val Cys Leu Val Cys Gly His
1 5 10 15

Gln Asp Arg Val Asn His Pro Ser Lys Lys Glu Tyr Gln Glu Val Thr
20 25 30

Val Cys Pro Glu Cys Asn Gly Ala Phe Val Asp Val Trp Lys Leu Gly
35 40 45

Lys Tyr Lys Arg Asn Thr Gln Ser Asn Glu Glu Pro Leu Leu Thr Ile
50 55 60

Thr Leu Thr Asp Ile Asp Ala Lys Pro Ile Val His Tyr Lys Gly Glu
65 70 75 80

Gln Ile Asp Arg Lys Leu Arg Val Thr Phe Asp Trp Glu Ser Gln Ser
85 90 95

Ile Asp Lys Ile Asn Arg Thr Tyr Ile His Ile Glu His Val Pro Ala
100 105 110

Asp Asn Lys Arg Leu Asn Thr Glu Thr Ile Gln His Asn His Pro Ile
115 120 125

Ala Asn Lys Glu Gln Val
130

<210> 101
<211> 84
<212> PRT
<213> Bacillus anthracis

<400> 101

Met Gln Val Tyr Cys Ser Glu Cys Asp Lys Ser Tyr Asp Met Gln Pro
1 5 10 15

Gln Val Thr Gln Leu Pro Asn Arg Ile Glu Lys Cys Phe Phe Ile Cys
20 25 30

Pro His Cys Asn His Glu His Ile Ala Ala Tyr Val Asn Asp Lys Ile
35 40 45

Arg Lys Tyr Gln Ala Asp Ile Ala Lys Cys His Glu Arg Ile Asn Lys
50 55 60

Lys Asn Leu Ala Ile Glu Asp Glu Met Lys Arg Leu Arg Lys Arg Phe
65 70 75 80

Asp Arg Arg Lys

<210> 102
<211> 63
<212> PRT
<213> Bacillus anthracis

<400> 102

Met Asn Gly Phe Asn Lys Ile Val Asn Asp Met Gln Asn Glu Gln Val
1 5 10 15

Gly Asn Ala Met Leu Asp Phe Ala Leu Ala Ala Lys Met Met Phe Ala
20 25 30

Ala Phe Thr Gln Phe Lys Glu Ala Gly Phe Asn Glu Glu Gln Ser Phe
35 40 45

Glu Leu Thr Arg Glu Ile Leu Ile Asp Ser Leu Ser Lys Asn Gln
50 55 60

<210> 103
<211> 63
<212> PRT
<213> Bacillus anthracis

<400> 103

Met Glu Gly Gln Glu Leu Thr Leu Glu Lys Lys Asp Ser Ile Tyr Leu
1 5 10 15

Arg Pro Arg Tyr Pro His Lys Ile Asp Ala Ser Lys Ile Lys Ser Leu
20 25 30

Lys Asp Val Ile Lys Ile Leu Gly Leu Met Asp Ile Arg Leu Asp Asp
35 40 45

Lys Ala Val Ile Gly Leu Glu His Leu Ile Glu Lys Glu Glu Glu
50 55 60

<210> 104
<211> 84
<212> PRT
<213> Bacillus anthracis

<400> 104

Met Gln Val Tyr Cys Ser Glu Cys Asp Lys Ser Tyr Asp Met Gln Pro
1 5 10 15

Gln Val Thr Gln Leu Pro Asn Arg Ile Glu Lys Cys Phe Phe Ile Cys
20 25 30

Pro His Cys Asn His Glu His Ile Ala Ala Tyr Val Asn Asp Lys Ile
35 40 45

Arg Lys Tyr Gln Ala Asp Ile Ala Lys Cys His Glu Arg Ile Asn Lys
50 55 60

Lys Asn Leu Ala Ile Glu Asp Glu Met Lys Arg Leu Arg Lys Arg Phe
65 70 75 80

Asp Arg Arg Lys

<210> 105
<211> 95
<212> PRT
<213> Bacillus anthracis

<400> 105

Leu Lys Arg Arg Lys Asn Lys Met Ala Asn Asn Lys Leu Ile Ile Glu
1 5 10 15

Val Thr Ala Asp Thr Thr Glu Ala Leu Glu Gly Ile Lys Glu Val Thr
20 25 30

Glu Ala Ala Asn Glu Cys Ala Asp Ala Leu Asp Lys Leu Glu Lys Ile
35 40 45

Met Asp Lys Phe Thr Asn Arg Ser Asp Thr Val Glu Leu Tyr Cys Glu
50 55 60

Gly Lys Leu Leu Ser Lys Ser Thr Val Asn His Thr Ala Asp Ser Ile
65 70 75 80

Gln Cys Arg Ile Ile Lys Gly Glu Glu Leu Gly Gly Ser Glu Arg
85 90 95

<210> 106
<211> 63
<212> PRT
<213> Bacillus anthracis

<400> 106

Met Glu Gly Gln Glu Leu Thr Leu Glu Lys Lys Asp Ser Ile Tyr Leu
1 5 10 15

Arg Pro Arg Tyr Pro His Lys Ile Asp Ala Ser Lys Ile Lys Ser Leu
20 25 30

Lys Asp Val Ile Lys Ile Leu Gly Leu Met Asp Ile Arg Leu Asp Asp
35 40 45

Lys Ala Val Ile Gly Leu Glu His Leu Ile Glu Lys Glu Glu Glu
50 55 60

<210> 107
<211> 127
<212> PRT
<213> Bacillus anthracis

<400> 107

Met Lys Lys Pro Leu Arg Pro Cys Cys Glu Phe His Cys Tyr Asn Leu
1 5 10 15

Thr Arg Glu Arg Tyr Cys Glu Glu His Arg Tyr Lys Glu Lys Glu Thr
20 25 30

Gln Gln Asp Lys Asn Arg Tyr Tyr Asp Arg Phe Lys Arg Asp Lys Glu
35 40 45

Ser Thr Ala Phe Tyr Arg Ser Lys Ala Trp Glu Arg Leu Arg Glu Gln
50 55 60

Ala Leu Met Arg Asp Lys Gly Leu Cys Leu His Cys Lys Asn Asn Arg
65 70 75 80

Lys Ile Lys Val Ala Asp Met Val Asp His Ile Ile Pro Ile Lys Val
85 90 95

Asp Pro Ser Leu Lys Leu Lys Leu Glu Asn Leu Gln Ser Leu Cys Asn
100 105 110

Pro Cys His Asn Arg Lys Thr Ala Glu Asp Lys Lys Lys Tyr Gly
115 120 125

<210> 108
<211> 95
<212> PRT
<213> Bacillus anthracis

<400> 108

Leu Lys Arg Arg Lys Asn Lys Met Ala Asn Asn Lys Leu Ile Ile Glu
1 5 10 15

Val Thr Ala Asp Thr Thr Glu Ala Leu Glu Gly Ile Lys Glu Val Thr
20 25 30

Glu Ala Ala Asn Glu Cys Ala Asp Ala Leu Asp Lys Leu Glu Lys Ile
35 40 45

Met Asp Lys Phe Thr Asn Arg Ser Asp Thr Val Glu Leu Tyr Cys Glu
50 55 60

Gly Lys Leu Leu Ser Lys Ser Thr Val Asn His Thr Ala Asp Ser Ile
65 70 75 80

Gln Cys Arg Ile Ile Lys Gly Glu Glu Leu Gly Gly Ser Glu Arg
85 90 95

<210> 109
<211> 127
<212> PRT
<213> Bacillus anthracis

<400> 109

Met Lys Lys Pro Leu Arg Pro Cys Cys Glu Phe His Cys Tyr Asn Leu
1 5 10 15

Thr Arg Glu Arg Tyr Cys Glu Glu His Arg Tyr Lys Glu Lys Glu Thr
20 25 30

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Gln Gln Asp Lys Asn Arg Tyr Tyr Asp Arg Phe Lys Arg Asp Lys Glu
        35                  40                  45

Ser Thr Ala Phe Tyr Arg Ser Lys Ala Trp Glu Arg Leu Arg Glu Gln
    50                  55                  60

Ala Leu Met Arg Asp Lys Gly Leu Cys Leu His Cys Lys Asn Asn Arg
65                  70                  75                  80

Lys Ile Lys Val Ala Asp Met Val Asp His Ile Ile Pro Ile Lys Val
                85                  90                  95

Asp Pro Ser Leu Lys Leu Lys Leu Glu Asn Leu Gln Ser Leu Cys Asn
            100                 105                 110

Pro Cys His Asn Arg Lys Thr Ala Glu Asp Lys Lys Lys Tyr Gly
        115                 120                 125
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